

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO

_____)	
UNITED STATES OF AMERICA,)	
)	
Plaintiff,)	
)	
v.)	CIVIL ACTION NO.: 5:22-cv-2163
)	
REPUBLIC STEEL,)	
)	
Defendant.)	
_____)	

CONSENT DECREE

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I. BACKGROUND

A. Plaintiff United States of America, on behalf of the United States Environmental Protection Agency (“EPA”), has filed a complaint in this action concurrently with this Consent Decree, alleging that Defendant, Republic Steel, violated Section 113(b) of the Clean Air Act (the “CAA” or the “Act”), 42 U.S.C. § 7413(b).

B. The United States contends that Defendant has violated certain CAA requirements at its steel production facility in Canton, Ohio (the “Facility”). More specifically, the Complaint alleges that Defendant violated three requirements under a Permit to Install issued by the Ohio Environmental Protection Agency (“Ohio EPA”) pursuant to federally-enforceable provisions of the Ohio State Implementation Plan: (1) failure to comply with lead emission limits for the Facility’s Flexcast Vacuum Tank Degasser (“VTD”) when it performed lead degassing; (2) failure to conduct a performance test for lead emissions from the Flexcast VTD; and (3) failure to conduct parametric monitoring and recordkeeping at various times.

C. The injunctive relief in this Consent Decree, specifically the emission controls pertaining to the Flexcast VTD and Cooling Tower Control System, are to reduce lead emission from the Defendant’s Facility and to reduce the potential for any excess lead emissions.

D. Defendant does not admit any liability to the United States arising out of the transactions or occurrences alleged in the Complaint.

E. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation between the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

F. After the Date of Lodging and prior to the Effective Date of this Consent Decree, Defendant idled its Facility. The Facility improvements specified by this Consent Decree,

including those pertaining to the Flexcast VTD and Cooling Tower Control System, will be required prior to any production of leaded steel and following Defendant's advance notice of its intent to resume operations at the Facility.

NOW, THEREFORE, before the taking of any testimony, without the adjudication or admission of any issue of fact or law except as provided in Section II, and with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

II. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 113(b) of the Act, 42 U.S.C. § 7413(b), and over the Parties. Venue lies in this District pursuant to Section 113(b) of the Act, 42 U.S.C. § 7413(b), and 28 U.S.C. §§ 1391(b) and (c) and 1395(a), because the Defendant resides in this judicial district. For purposes of this Decree, or any action to enforce this Decree, Defendant consents to the Court's jurisdiction over this Decree and any such action and over Defendant and consents to venue in this judicial district.

2. For purposes of this Consent Decree, Defendant agrees that the Complaint states claims upon which relief may be granted pursuant to Section 113(b) of the Act, 42 U.S.C. § 7413(b).

III. APPLICABILITY

3. The obligations of this Consent Decree apply to and are binding upon the United States, and upon Defendant and any successors, assigns, or other entities or persons otherwise bound by law.

4. No transfer of ownership or operation of the Facility, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Defendant of its obligation to ensure

that the terms of the Decree are implemented. At least 30 Days prior to such transfer, Defendant shall provide a copy of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA and DOJ, in accordance with Section XV (Notices). Any attempt to transfer ownership or operation of the Facility without complying with this Paragraph constitutes a violation of this Decree.

5. Defendant shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties might reasonably include compliance with any provision of this Decree, as well as to any contractor retained to perform work required under this Consent Decree. Defendant shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

6. In any action to enforce this Consent Decree, Defendant shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree.

IV. DEFINITIONS

7. Terms used in this Consent Decree that are defined in the Act or in regulations promulgated pursuant to the Act have the meanings assigned to them in the Act or such regulations, unless otherwise provided in this Decree. Whenever the terms set forth below are used in this Consent Decree, the following definitions apply:

“Clean Air Act,” “CAA,” or “Act” means the federal Clean Air Act, 42 U.S.C. §§ 7401-7671q, and is implementing regulations.

“Complaint” means the complaint filed by the United States in this action.

“Consent Decree” or “Decree” means this Decree and Appendix A attached hereto (listed in Section XXVI).

“Cooling Tower Control System Parameter Values” means the values for the Cooling Tower Emissions Control System Parameters that either EPA has approved pursuant to Paragraph 21 or proposed by Defendant in its Compliance Demonstration Report prior to EPA approval.

“Date of Entry of this Consent Decree” or “Date of Entry” means the Effective Date of this Consent Decree as set forth in Section XVI.

“Date of Lodging of this Consent Decree” or “Date of Lodging” means the date that this Consent Decree is filed for lodging with this Court, pending solicitation of public comment.

“Day” means a calendar day unless expressly stated to be a business day. In computing any period of time for a deadline under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal holiday, the period runs until the close of business of the next business day.

“Defendant” means Republic Steel.

“DOJ” means the United States Department of Justice and any of its successor departments or agencies.

“Effective Date” means the definition provided in Section XVI.

“EPA” means the United States Environmental Protection Agency and any of its successor departments or agencies.

“Facility” means Defendant’s steel plant located at 2633 8th St NE, Canton, Stark County, Ohio.

“Flexcast Building” and “Flexcast” means the building at the Facility that houses, among other equipment, a VTD where lead can be added to the molten steel before casting. The Flexcast Building is physically connected and partially open to the Meltshop Building.

“HEPA Filter” means a high efficiency particulate air filter that can theoretically remove at least 99.97% of airborne particles with a size of 0.3 microns.

“Inertial Separator” or “Cyclone” means a device that uses centrifugal force to separate and control solid or liquid particulate matter.

“Lead Degassing” means the process by which a ladle with leaded steel is returned to the VTD for purposes of removing lead from the steel.

“Lead NAAQS” means the primary and secondary National Ambient Air Quality Standards for lead, measured as lead in total suspended particulates, not to exceed 0.15 micrograms per cubic meter over a 3-month rolling average.

“Meltshop Building” and “Meltshop” mean Defendant’s building housing two electric arc furnaces and supporting equipment at Defendant’s Facility. The Meltshop Building is physically connected and partially open to the Flexcast Building.

“Ohio EPA” means the Ohio Environmental Protection Agency and any of its successor departments or agencies.

“Ohio SIP” means the Ohio State Implementation Plan, and any amendments thereto, as approved by EPA pursuant to Section 110 of the Act, 42 U.S.C. § 7410.

“Paragraph” means a portion of this Decree identified by an Arabic numeral.

“Parties” means the United States and Defendant.

“Permit to Install” or “Flexcast Permit” means Defendant’s 2004 Permit to Install No. 15-01578, issued by Ohio EPA.

“Section” means a portion of this Decree identified by a Roman numeral.

“Startup Date” means the date that Defendant resumes production of leaded steel at its Facility.

“State” means the State of Ohio.

“Title I” means Title I of the Clean Air Act.

“Title V Permit” means an operating permit issued under Title V of the Clean Air Act.

“United States” means the United States of America, acting on behalf of EPA.

“VTD” means vacuum tank degasser.

V. CIVIL PENALTY

8. Within 90 Days after the Effective Date, Defendant shall pay the sum of \$990,000 as a civil penalty, together with interest accruing from the Date of Lodging, through the date of payment, at the rate specified in 28 U.S.C. § 1961 as of the Date of Lodging.

9. Defendant shall pay the civil penalty due by FedWire Electronic Funds Transfer (“EFT”) to the DOJ account, in accordance with instructions provided to Defendant by the Financial Litigation Unit (“FLU”) of the United States Attorney’s Office for the Northern District of Ohio after the Effective Date. The payment instructions provided by the FLU will include a Consolidated Debt Collection System (“CDCS”) number, which Defendant shall use to identify all payments required to be made in accordance with this Consent Decree. The FLU will provide the payment instructions for Defendant to:

Robert Koury
Republic Steel
2633 8th Street N.E.
Canton, Ohio 44704
rkoury@republicsteel.com

Defendant may change the individual to receive payment instructions on its behalf by providing written notice of such change to DOJ and EPA in accordance with Section XV (Notices).

10. At the time of payment, Defendant shall send notice that payment has been made: (i) to EPA via email at cinwd_acctsreceivable@epa.gov or via regular mail at EPA Cincinnati Finance Office, 26 W. Martin Luther King Drive, Cincinnati, Ohio 45268; (ii) to DOJ via email or regular mail in accordance with Section XV; and (iii) to EPA in accordance with Section XV. Such notice shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in *United States v. Republic Steel* and shall reference the civil action number, CDCS Number and DOJ case number 90-5-2-1-12589.

11. Defendant shall not deduct any penalties paid under this Decree pursuant to this Section or Section IX (Stipulated Penalties) in calculating its federal income tax.

VI. COMPLIANCE REQUIREMENTS

A. PRE-STARTUP REQUIREMENTS

12. Pre-Startup Notification. At least 300 Days before the planned Startup Date, Defendant shall send written notice of the planned Startup Date to the United States Department of Justice and EPA in accordance with the requirements of Section XV (Notices).

13. Startup Prerequisites. Defendant shall not resume operations at its Facility for the production of leaded steel before the planned Startup Date given in the notice required by Paragraph 12 and before: (i) installation of the upgrades to the Flexcast VTD Emissions control system required by Paragraph 14; (ii) installation of the cooling tower improvements required by Paragraph 18; (iii) modification of its “Leaded Steel Parametric Monitoring and Recordkeeping Plan” as required by Paragraph 22; and (iv) installation of the compliance management system required by Paragraph 25.

B. INSTALLATION AND DEMONSTRATION OF FLEXCAST VTD DEMISTER AND HEPA FILTER

14. Upgrades to Flexcast VTD Emissions Control System. Defendant shall install and operate the Inertial Separator and HEPA Filter pollution control equipment at the Flexcast VTD.

- a. At least 300 days prior to the Startup Date, Defendant shall submit to EPA for review and approval the Flexcast VTD Control Plan that describes the pollution control system at the Flexcast VTD – including the Inertial Separator and the HEPA Filter – and obtain EPA’s approval of the overall control efficiency of the pollution control equipment prior to installation.
- b. Within 180 Days after EPA’s approval of the design overall control efficiency, Defendant shall install the Inertial Separator and HEPA Filter at the Flexcast VTD at the Facility to aid in the control of lead emissions from the Flexcast VTD. The system shall be consistent with the Flexcast VTD Control Plan described in Paragraph 14.a. The “Flexcast VTD Emissions Control System” shall thereafter consist of the steam ejector/condenser system, the Inertial Separator and the HEPA filter, and Defendant shall thereafter operate the Flexcast VTD Emissions Control System at all times when the Flexcast VTD is in operation. Defendant shall construct the Flexcast VTD Emissions Control System such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and procedures at the outlet stack. Defendant may submit a request for extension of the deadline for installation of the Inertial Separator and HEPA Filter at the Flexcast VTD based upon delays in the delivery of necessary equipment due to third party supply constraints, which shall be subject to EPA’s review and

approval under Consent Decree Section VII (Review and Approval of Deliverables).

15. Compliance Demonstration Protocol. Within 30 Days after EPA's approval of the Flexcast VTD Control Plan pursuant to Paragraph 14.a, Defendant and EPA shall meet to discuss a proper methodology for testing the lead emission rate from the VTD stack. By no later than 30 Days after installation of the Inertial Separator and HEPA Filter at the Flexcast VTD, Defendant shall submit to EPA for review and approval pursuant to Section VII (Review and Approval of Deliverables) a Compliance Demonstration Protocol for the Flexcast VTD Emissions Control System. The Compliance Demonstration Protocol shall describe the methodology by which the Flexcast VTD Emissions Control System will be tested to determine the lead emission rate from the VTD stack. The Compliance Demonstration Protocol shall require the compliance demonstration to be carried out under process operating conditions producing the highest possible lead emissions to the Flexcast VTD Emissions Control System, and shall include the following operating scenarios:

- a. Testing of a leaded-steel heat to produce leaded steel with the highest lead content/inoculation for the period of August 2022 to August 2023; and
- b. Unless Defendant can develop an alternative to degas at the Flexcast VTD that is approved by EPA under Consent Decree Section VII (Review and Approval of Deliverables) prior to the date of testing, testing of Lead Degassing to remove the lead from molten steel. EPA's decision on degas alternatives shall not be subject to Consent Decree Section XI (Dispute Resolution).

16. Commencement and Completion of Compliance Demonstration. By no later than 30 Days after receipt of EPA's approval of Defendant's Compliance Demonstration Protocol for the Flexcast VTD Emissions Control System, Defendant shall demonstrate the effectiveness of its Flexcast VTD Emissions Control System to control lead emissions from the Flexcast VTD and demonstrate compliance with applicable Flexcast Permit lead emission limits by conducting the testing in accordance with the EPA-approved Compliance Demonstration Protocol. EPA may extend the deadline in Paragraph 16 for the demonstration of the effectiveness of the Flexcast VTD Emissions Control System upon written request from Defendant.

17. Compliance Demonstration Report. By no later than 30 Days after completion of the Compliance Demonstration, Defendant shall submit to EPA for review and approval pursuant to Section VII (Review and Approval of Deliverables) a Compliance Demonstration Report.

- a. The Compliance Demonstration Report shall describe the conditions under which the Compliance Demonstration was carried out, all results of performance testing, and all steps taken to comply with the Compliance Demonstration Protocol.
- b. In the Compliance Demonstration Report, Defendant shall submit to EPA for review and approval pursuant to Section VII (Review and Approval of Deliverables) operating parameters, which shall include at a minimum the pressure drop across the HEPA filter, for the Inertial Separator and HEPA filter and the proposed operating parameter values that it proposes to use in operating the Flexcast VTD Emissions Control System (the "Flexcast VTD Emissions Control System Parameters").
- c. For the purposes of this Consent Decree, the "Flexcast VTD Control

System Parameter Values” are the values for the Flexcast VTD Emissions Control System Parameters that either EPA has approved pursuant to Paragraph 17.b or proposed by Defendant in its Compliance Demonstration Report prior to EPA approval. These values shall be used by Defendant to demonstrate continuous compliance with applicable Flexcast Permit emission limits for lead at the Flexcast VTD.

C. REPLACEMENT AND DEMONSTRATION OF COOLING TOWER DEMISTERS AND EXHAUST FAN MOTORS

18. Cooling Tower Improvements. Defendant shall replace the demisters at the cooling tower at the Flexcast VTD with new demisters that are designed to achieve cooling tower drift loss of 0.001% or less. Reducing drift loss will decrease the amount of lead particles emitted by the cooling tower to the atmosphere. The Cooling Tower Emission Control System Parameter Values shall be used by Defendant to demonstrate continuous compliance with applicable Title I and Title V Permit emission limits for lead at the cooling tower.

- a. Attached hereto as Appendix A are design specifications for the cooling tower demisters for Model XF80Max that Defendant will use as replacement demisters.
- b. Defendant shall (1) install replacement cooling tower demisters no later than September 30, 2022 and (2) replace the cooling tower exhaust fan motors with a variable frequency drive motor and install associated flow meters and a controller (“Cooling Tower Emissions Control System”) within thirty (30) Days of delivery of the equipment for replacement of the cooling tower exhaust fan motors. The Cooling Tower Emissions Control System shall be consistent with the design plan attached to this Consent Decree as Appendix

A. Once installed, Defendant shall operate the Cooling Tower Emissions Control System at all times when the cooling tower is in operation.

19. Compliance Demonstration Protocol. By no later than 90 Days prior to the Startup Date, Defendant shall submit to EPA for review and approval pursuant to Section VII (Review and Approval of Deliverables) a Compliance Demonstration Protocol for the Cooling Tower Emissions Control System. The Compliance Demonstration Protocol shall describe the methodology by which the Cooling Tower Emissions Control System will be tested to determine the drift loss and lead emissions from the cooling tower. The Compliance Demonstration Protocol shall require the compliance demonstration to be carried out under process operating conditions producing the highest possible total liquid drift and highest lead concentration in the water measured at the inlet of the cooling tower, as well as meeting the requirements of relevant EPA test methods, and shall include the following operating scenarios:.

- a. Testing of a leaded-steel heat to produce leaded steel with the highest lead content/inoculation for the period of August 2022 to August 2023; and
- b. Unless Defendant can develop an alternative to degas at the Flexcast VTD that is approved by EPA under Consent Decree Section VII (Review and Approval of Deliverables) prior to the date of testing, testing of Lead Degassing to remove the lead from molten steel. EPA's decision on degas alternatives shall not be subject to Consent Decree Section XI (Dispute Resolution).

20. Commencement and Completion of Compliance Demonstration. By no later than 30 Days after receipt of EPA's approval of Defendant's Compliance Demonstration Protocol for the Cooling Tower Emissions Control System, Defendant shall demonstrate the effectiveness of the Cooling Tower Emissions Control System at minimizing drift loss by maximizing efficient

operation of the Cooling Tower Emission Control System in order to achieve a drift loss of not more than 0.001%, thereby controlling lead emissions, by conducting the testing of drift loss in accordance with the EPA-approved Compliance Demonstration Protocol.

21. Compliance Demonstration Report. By no later than 30 Days after completion of the compliance demonstration, Defendant shall submit to EPA for review and approval pursuant to Section VII (Review and Approval of Deliverables) a Compliance Demonstration Report. The Compliance Demonstration Report shall describe the conditions under which the compliance demonstration was carried out, all results of performance testing, and all steps taken to comply with the Compliance Demonstration Protocol. If the Compliance Demonstration Report shows that the Cooling Tower Emission Control System did not achieve a drift loss of 0.001% or less, Defendant shall include in its Compliance Demonstration Report modifications and a schedule for implementing any modifications to the Cooling Tower Emission Control System necessary to achieve a drift loss of not more than 0.001%. The Compliance Demonstration Report shall include proposed values for the following operating parameters (the “Cooling Tower Emissions Control System Parameters”) with which it proposes to use in operating the modified cooling tower:

- a. Maximum lead mass rate in the cooling water entering the cooling tower; and
- b. Operating parameters for cooling tower.

D. OPERATION OF EMISSIONS CONTROL SYSTEM

22. At least 30 Days prior to the Startup Date, Defendant shall modify its “Leaded Steel Parametric Monitoring and Recordkeeping Plan” to require, for each lead inoculation event, monitoring and recording of:

- a. the tank/suction pressure prior to energizing the suction fume step (atmospheric pressure);
- b. the tank/suction line pressure after the suction fume step has been initiated and stabilized; and
- c. the after-condenser water temperature after the suction fume step has been initiated and stabilized.

The Defendant shall not commence with lead inoculation unless the suction fume step pressure is less than the atmospheric pressure.

23. After Defendant's submission of the Flexcast VTD and Cooling Tower Compliance Demonstration Reports, Defendant shall operate the Flexcast VTD Emissions Control System and Cooling Tower Emissions Control System at all times the Flexcast VTD and cooling tower are operating in a manner not to exceed, or go below, whichever is applicable, the Control System Parameter Values for each emissions unit. Once the Values are established, such Values shall become enforceable limits under this Consent Decree and Defendant shall submit a Title I permit application to incorporate the limits into Defendant's applicable permit.

24. After Defendant's submission of the Compliance Demonstration Reports, Defendant may not alter operation of the Flexcast VTD, cooling tower, or their respective Emissions Pollution Control Systems in any way that could affect emissions of lead unless Defendant first performs an additional compliance demonstration under the altered operation conditions in accordance with Paragraphs 19 through 21 and thereby demonstrates that, after implementing the proposed alteration, the operation of the Flexcast VTD and cooling tower in accordance with the Flexcast VTD Control System Parameter Values and Cooling Tower Control System Parameter Values would continue to satisfy the lead emission limits of each

applicable permit. This provision does not require approval of production fluctuations that may occur where such fluctuations do not result in exceedance of the lead emission limits.

E. COMPLIANCE MANAGEMENT SYSTEM

25. At least ninety (90) Days prior to the Startup Date, Defendant shall install continuous electronic differential pressure and negative pressure monitors and recorders for the Flexcast baghouse. Defendant shall operate that compliance management system on a continuous basis when Defendant resumes operations at its Facility for the production of leaded steel. The system shall automatically notify operators whenever the differential pressure or negative pressure is out of range for the Flexcast baghouse. Defendant may submit a request to extend the deadline to install the electronic differential pressure and negative pressure monitors and recorders for the Flexcast baghouse, which shall be subject to EPA's review and approval under Consent Decree Section VII (Review and Approval of Deliverables).

26. Within ninety (90) Days from EPA's approval of the Flexcast VTD Control System Parameter Values, Defendant shall install an automatic electronic monitoring and recording system for the Flexcast VTD that is capable of automatically recording on a frequent basis all Flexcast VTD Emissions Control System Parameters. The system shall automatically notify operators whenever the Flexcast VTD Emissions Control System Parameters are out of range. Defendant may submit a demonstration that automatic electronic monitoring is either cost prohibitive or not feasible based upon the configuration of the Flexcast and may submit an alternative method for monitoring the Flexcast VTD Emissions Control System Parameters, which shall be subject to EPA's review and approval under Consent Decree Section VII (Review and Approval of Deliverables).

27. Within ninety (90) Days from EPA's approval of the Cooling Tower Emission Control System Parameter Values, Defendant shall install an automatic electronic monitoring and recording system for the Cooling Tower that is capable of automatically recording on a frequent basis all Cooling Tower Control System Parameter Values. The system shall automatically notify operators whenever the Cooling Tower Control System Parameter Values are out of range. Within ninety (90) days after submission of the Compliance Demonstration Report, Defendant shall commence measuring once per day for a period of not less than 180 days the lead concentration and flow rate of the cooling water entering the Cooling Tower and use these measurements to calculate and record the mass rate of lead in the cooling water on a monthly average basis. Defendant may request a new frequency of no less than two lead concentration and flow measurements per week, to occur on the same days of the week and at the same times of the day each week, following 180 days of daily lead concentration and flow rate measurements. Any request to modify measurement frequency shall be subject to EPA approval under Consent Decree Section VII (Review and Approval of Deliverables). Defendant may submit a demonstration that automatic electronic monitoring is either cost prohibitive or not feasible based upon the configuration of the cooling towers and may submit an alternative method for monitoring the Cooling Tower Emission Control System Parameters Values, which shall be subject to EPA's review and approval under Consent Decree Section VII (Review and Approval of Deliverables).

28. Within ninety (90) Days from EPA's approval of the Cooling Tower Emission Control System Parameters and EPA's approval of the Flexcast VTD Control System Parameter Values (whichever approval date is later), Defendant shall develop and implement a comprehensive Compliance Management System ("CMS") that identifies each monitoring,

recordkeeping and reporting obligation related to pollution control equipment under the Permit to Install at or related to the Flexcast VTD and addresses the parameters automatically monitored in Paragraphs 25-27 above. The CMS shall also include the following:

- a. Internal procedures for notifying when parameters are out of range so that they can be immediately investigated, corrected, and actions documented;
- b. A schedule for, and recording of, when equipment maintenance is performed and when instruments used to measure operating parameters are calibrated; and
- c. The central location where all records – both hard copies and digital, required by the Facility’s recordkeeping obligations – are kept, so they can be referenced when completing reporting obligations.

29. Defendant shall report within the semi-annual progress report required by Paragraph 43 all deviations of parametric limits identified in the CMS that occurred during the relevant six-month reporting period, including:

- a. The length of the deviation from the parametric limit;
- b. The cause of the deviation;
- c. The step(s) taken to bring the equipment back into compliant parameters; and
- d. The step(s) taken to prevent further deviation of the parametric limit.

30. Good Air Pollution Control Practices. At all times including during startup, shutdown, or the malfunction of equipment related to the Flexcast VTD, Defendant shall operate the Flexcast VTD, the Flexcast VTD Emissions Control System, and the Cooling Tower Control System in a manner consistent with safety and good air pollution control practices to minimize lead emissions to the greatest extent possible, to minimize periods of upset or malfunction, and

to ensure their continued proper performance, or, as needed, replacement. At the time of its submission of the Compliance Demonstration Reports pursuant to Paragraphs 17 and 19, Defendant shall submit to EPA a copy of its written startup, shutdown, and malfunction plan.

F. PERMITTING AND EMISSION CREDIT PROVISIONS

31. Permits Including Control System Parameter Values. By no later than 60 Days after EPA approves the Compliance Demonstration Reports and Control System Parameter Values under Paragraphs 17 and 21, Defendant shall submit to Ohio EPA a request for a permit modification under Ohio Admin. Code 3745-31 for the installation and continuous operation of the Flexcast VTD Emissions Control System and Cooling Tower Emissions Control System. The request shall include a copy of the Compliance Demonstration Reports as an attachment or appendix. The requested permit requirements will survive termination of this Consent Decree and will require adherence to the Control System Parameter Values enumerated in the EPA-approved Compliance Demonstration Reports for purposes of demonstrating compliance with applicable permit emission limits. The request shall include a requirement to take immediate corrective actions should a parameter exceedance occur, as well as the required monitoring frequencies and recordkeeping requirements for each Parameter Value. The Control System Parameter Values may be adjusted in subsequent permitting as confirmed by testing.

32. Additional Permit Conditions. The Title I permit application shall include the following:

- a. A requirement to conduct, every five years, drift measurement testing to determine the drift factor for the cooling tower using the test protocol approved pursuant to Paragraph 19;

- b. A requirement to monitor and record all parametric values according to Paragraphs 26 and 27; and
- c. A requirement to comply with Defendant's Standard Operating Procedure ("SOP") for eliminating Lead Degassing events.

33. Application for a Revised Title V Permit. After Defendant's application under Paragraph 31 is approved, within 90 Days, Defendant shall apply to amend the applicable Title V Permit for the Facility under Ohio Admin. Code 3745-77 to include: a requirement to adhere to the Flexcast VTD Control System Parameter Values and Cooling Tower Control System Parameter Values, monitoring frequencies, and SOP provisions, etc., contained in the permit issued under Paragraph 31; and a copy of the Compliance Demonstration Reports for the Flexcast VTD and Cooling Tower Emissions Control Systems as an attachment or appendix.

34. Prohibition on Use of Emission Reductions. Defendant shall neither generate nor use any emission reductions resulting from the installation and operation of the Emissions Control Systems required by this Consent Decree as creditable, contemporaneous emissions decreases or emission offset credits in any Prevention of Significant Deterioration ("PSD"), major New Source Review ("NSR"), and/or minor NSR permit or permit proceeding, or under the Ohio New Source Review program (OAC 3745-31-10), or in any emission reduction trading market system. In addition, the emissions reductions of that result from implementing the terms of this Consent Decree may not be sold or traded by Defendant. However, nothing in this Paragraph shall be construed to limit Defendant's generation and use of emission reductions that are achieved from sources not under the Consent Decree, or reductions of any other pollutant at any source. Furthermore, nothing in this Consent Decree is intended to preclude the emission reductions generated under this Consent Decree from being considered by EPA or the State as

creditable contemporaneous decreases for the purpose of mitigation under this Consent Decree, attainment demonstrations submitted pursuant to Section 110 of the CAA, 42 U.S.C. § 7410, or in determining impacts on NAAQS, PSD increment, or air quality related values.

35. Timely and Complete Applications and Delays in Permits or Approvals. Where any compliance obligation under this Section requires Defendant to obtain any other federal, state, or local permit or approval, or modification to any existing federal, state or local permit or approval, Defendant shall submit timely and complete applications and take all other actions reasonably necessary to obtain all such permits or approvals. Defendant may seek relief under the provisions of Section X of this Consent Decree (Force Majeure) for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Defendant has submitted timely and complete applications and taken all other actions within Defendant's control necessary to obtain all such permits or approvals.

VII. REVIEW AND APPROVAL OF DELIVERABLES

36. Approval of Deliverables. After review of any plan, report, or other item that is required to be submitted pursuant to this Consent Decree, EPA will in writing: (a) approve the submission; (b) approve the submission upon specified conditions; (c) approve part of the submission and disapprove the remainder; or (d) disapprove the submission.

37. If the submission is approved pursuant to Paragraph 36(a), Defendant shall take all actions required by the plan, report, or other document, in accordance with the schedules and requirements of the plan, report, or other document, as approved. If the submission is conditionally approved or approved only in part pursuant to Paragraph 36(b) or (c), Defendant shall, upon written direction from EPA, take all actions required by the approved plan, report, or

other item that EPA determines are technically severable from any disapproved portions, subject to Defendant's right to dispute only the specified conditions or the disapproved portions, under Section XI (Dispute Resolution).

38. If the submission is disapproved in whole or in part pursuant to Paragraph 36(c) or (d), Defendant shall, within 45 Days or such other time as the Parties agree to in writing, correct all deficiencies and resubmit the plan, report, or other item, or disapproved portion thereof, for approval, in accordance with the preceding Paragraphs. If the resubmission is approved in whole or in part, Defendant shall proceed in accordance with the preceding Paragraph.

39. If a resubmitted plan, report, or other item, or portion thereof, is disapproved in whole or in part, EPA may again require Defendant to correct any deficiencies, in accordance with the preceding Paragraphs, or EPA may correct any deficiencies subject to Defendant's right to invoke Dispute Resolution and the right of EPA to seek stipulated penalties as provided in the preceding Paragraphs.

40. If Defendant elects to invoke Dispute Resolution, as set forth in Section XI (Dispute Resolution), Defendant shall do so by sending a Notice of Dispute in accordance with Paragraph 71 within 30 Days (or such other time as the Parties agree to in writing) after receipt of the applicable decision.

41. Any stipulated penalties applicable to the original submission, as provided in Section IX, accrue during the 45 Day period or other specified period, but shall not be payable unless the resubmission is untimely or is disapproved in whole or in part; provided that, if the original submission was so deficient as to constitute a material breach of Defendant's obligations

under this Decree, the stipulated penalties applicable to the original submission shall be due and payable notwithstanding any subsequent resubmission.

VIII. REPORTING REQUIREMENTS

42. At least 14 days prior to startup of the Continuous Bloom Casting Facility (“CBCF”), Defendant shall submit notification to EPA of its intent to resume production of leaded steel and/or non-leaded steel at the CBCF. Defendant has a permit for the CBCF, although it is not currently operating the CBCF.

43. Defendant shall submit a semi-annual progress report by July 31st (for the reporting period from January 1 to June 30) and January 31st (for the reporting period from July 1 to December 31) of each year after the Lodging of this Consent Decree, until termination of this Decree pursuant to Section XIX. Defendant shall submit the reports to EPA at the addresses set forth Section XV (Notices). Each semi-annual report shall contain the following information:

- a. Each report shall describe the work performed and progress made toward implementing the requirements of Section VI (Compliance Requirements), including a narrative description of activities undertaken, problems encountered or anticipated, together with implemented or proposed solutions; status of permit applications; operation and maintenance; reports to state agencies; the status of any construction or compliance measures, and the completion of any milestones.

44. If Defendant violates, or has reason to believe that it may violate, any requirement of this Consent Decree, Defendant shall notify DOJ and EPA of such violation and its likely duration, in writing, within ten business days of the Day Defendant first becomes aware of the violation, with an explanation of the violation’s likely cause and of the remedial steps taken, or

to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Defendant shall so state in the report. Defendant shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within 30 Days of the Day Defendant becomes aware of the cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Defendant of its obligation to provide the notice required by Section X (Force Majeure).

45. Whenever any violation of this Consent Decree or any other event affecting Defendant's performance under this Decree may pose an immediate threat to the public health or welfare or the environment, Defendant shall notify EPA orally or electronically as soon as possible, but no later than 24 hours after Defendant first knew of the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

46. Each report submitted by Defendant under this Section shall be signed by an official of the submitting party and include the following certification:

I certify under penalty of perjury that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

47. This certification requirement does not apply to emergency or similar notifications where compliance would be impractical.

48. The reporting requirements of this Consent Decree do not relieve Defendant of any reporting obligations required by the Act or implementing regulations, or by any other federal, State, or local law, regulation, permit, or other requirement.

49. Any information provided pursuant to this Consent Decree may be used by the United States in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law. All information submitted by Republic Steel to the United States shall be subject to public inspection unless identified and supported as confidential business information (“CBI”). As to any information Republic Steel seeks to protect as CBI pursuant to 40 C.F.R. Part 2, Republic Steel shall follow the procedures set forth in 40 C.F.R. Part 2. Under no circumstances shall emissions data be identified or considered CBI.

IX. STIPULATED PENALTIES

50. Defendant shall be liable for stipulated penalties to the United States for violations of this Consent Decree as specified below, unless excused under Section X (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Decree, including any work plan or schedule approved under this Decree, according to all applicable requirements of this Decree and within the specified time schedules established by or approved under this Decree.

51. Late Payment of Civil Penalty. If Defendant fails to pay the civil penalty required to be paid under Section V (Civil Penalty) when due, Defendant shall pay a stipulated penalty of 0.25% of the unpaid principal amount per Day for each Day that the payment is late.

52. Submittal and Approval of the Design Overall Control Efficiency and Compliance Demonstration Reports. Subject to Section VI (Compliance Requirements), for failure to timely submit a) design and overall control efficiency for the VTD Emission Control System as

required by Subparagraph 14.a.; b) design and specification plans for the Cooling Tower Demisters as required by Subparagraph 18.a; c) Compliance Demonstration Protocols as required by Paragraphs 15 and 19; Compliance Demonstration Reports as required by Paragraphs 17 and 21 of the Consent Decree, stipulated Penalties shall accrue as follows:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th Day
\$1,250	15th through 30th Day
\$2,500	31st Day and beyond

53. Emissions Limits/Parameter Values. For failure to meet the emission requirement in Paragraph 23 of this Consent Decree, simultaneous exceedances of multiple related parameter values only counts as a single exceedance for purposes of counting as an exceedance, and stipulated penalties shall accrue as follows:

<u>Penalty Per Violation Per Day</u>	<u>Number of Exceedances</u>
\$1,250/Day	1-5 Exceedances/Day
\$2,500/Day	6-10 Exceedances/Day
\$4,500/Day	11+ Exceedances/Day

54. Compliance Requirements. For failure to implement the following compliance requirements (except those submittal of compliance protocols and demonstration reports which are set out separately in Paragraph 52 and reporting requirements which are set out separately in Paragraph 55) in accordance with the requirements of the Decree, including a) demonstration of the effectiveness of its Flexcast VTD Emissions Control System in accordance with Paragraph 16; b) replacement of the cooling tower demisters and exhaust fan motor in accordance with Paragraph 18.b; c) cooling tower improvements that will maximize the efficient operation of the

Cooling Tower Emission Control System and achieve a drift loss of not more than 0.001% in accordance with Paragraph 20; d) routine preventative maintenance of the Flexcast VTD Emissions Control System and Cooling Tower Emissions Control System in accordance with Paragraph 24; e) installation and operation of the compliance management system, in accordance with Paragraphs 25 (monitors and recorders for the Flexcast baghouse), 26 (automatic electronic monitoring and recording system for the Flexcast VTD), 27 (automatic electronic and recording system for the Cooling Tower), and 28 (develop and implement a comprehensive Compliance Management System); f) compliance with the pre-startup notification requirement specified by Paragraph 12; g) compliance with the startup prerequisites specified by Paragraph 13, stipulated penalties shall accrue per violation per Day for each violation:

<u>Penalty Per Violation Per day</u>	<u>Period of Noncompliance</u>
\$1,250	1st through 14th Day
\$2,000	15th through 30th Day
\$4,000	31st Day and beyond

55. Reporting Requirements. For failure to meet the reporting requirements of Section VIII (Reporting Requirements), stipulated penalties shall accrue as follows:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$400	1st through 14th Day
\$750	15th through 30th Day
\$1,500	31st Day and beyond

56. Stipulated penalties under this Consent Decree shall begin to accrue the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue

to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

57. Defendant shall pay any stipulated penalty within 45 Days of receiving the United States' written demand unless the demand is disputed in accordance with the requirements in Section XI (Dispute Resolution) of this Consent Decree.

58. The United States may in the unreviewable exercise of its discretion, reduce or waive stipulated penalties otherwise due it under this Consent Decree.

59. Stipulated penalties shall continue to accrue as provided in Paragraph 56, during any Dispute Resolution, but need not be paid until the following:

- a. If the dispute is resolved by agreement of the Parties or by a decision of EPA that is not appealed to the Court, Defendant shall pay accrued penalties determined to be owing, together with interest, to the United States within 30 Days of the effective date of the agreement or the receipt of EPA's decision or order.
- b. If the dispute is appealed to the Court and the United States prevails in whole or in part, Defendant shall pay all accrued penalties determined by the Court to be owing, together with interest, within 60 Days of receiving the Court's decision or order, except as provided in subparagraph c, below.
- c. If any Party appeals the District Court's decision, Defendant shall pay all accrued penalties determined to be owing, together with interest, within 15 Days of receiving the final appellate court decision.

60. Obligations Prior to the Effective Date. Upon the Effective Date, the stipulated penalty provisions of this Decree shall be retroactively enforceable with regard to any and all

violations of Paragraph 18.b. that have occurred prior to the Effective Date, provided that stipulated penalties that may have accrued prior to the Effective Date may not be collected unless and until this Consent Decree is entered by the Court.

61. Defendant shall pay stipulated penalties owing to the United States in the manner set forth in Paragraph 9 and with the confirmation notices required by Paragraph 10, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid.

62. If Defendant fails to pay stipulated penalties according to the terms of this Consent Decree, Defendant shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States from seeking any remedy otherwise provided by law for Defendant's failure to pay any stipulated penalties.

63. The payment of penalties and interest, if any, shall not alter in any way Defendant's obligation to complete the performance of the requirements of this Consent Decree.

64. Non-Exclusivity of Remedy. Stipulated penalties are not the United States' exclusive remedy for violations of this Consent Decree. Subject to the provisions of Section XIII (Effect of Settlement/Reservation of Rights), the United States expressly reserves the right to seek any other relief it deems appropriate for Defendant's violation of this Decree or applicable law, including but not limited to an action against Defendant for statutory penalties, additional injunctive relief, mitigation or offset measures, and/or contempt. However, the amount of any statutory penalty assessed for a violation of this Consent Decree shall be reduced by an amount equal to the amount of any stipulated penalty assessed and paid pursuant to this Consent Decree.

X. FORCE MAJEURE

65. “Force majeure,” for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Defendant, of any entity controlled by Defendant, or of Defendant’s contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Defendant’s best efforts to fulfill the obligation. The requirement that Defendant exercise “best efforts to fulfill the obligation” includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (a) as it is occurring and (b) following the potential force majeure, such that the delay and any adverse effects of the delay are minimized. “Force Majeure” does not include Defendant’s financial inability to perform any obligation under this Consent Decree.

66. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, Defendant shall provide notice by email to the EPA contacts identified in Section XV (Notices) of this Consent Decree, within 72 hours of when Defendant first knew that the event might cause a delay. Within seven Days thereafter, Defendant shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Defendant’s rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. Defendant shall include with any notice all available documentation supporting the claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Defendant from asserting

any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Defendant shall be deemed to know of any circumstance of which Defendant, any entity controlled by Defendant, or Defendant's contractors knew or should have known.

67. If EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. EPA will notify Defendant in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

68. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify Defendant in writing of its decision.

69. If Defendant elects to invoke the dispute resolution procedures set forth in Section XI (Dispute Resolution), it shall do so no later than 15 Days after receipt of EPA's notice. In any such proceeding, Defendant shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Defendant complied with the requirements of Paragraphs 65 and 66. If Defendant carries this burden, the delay at issue shall be deemed not to be a violation by Defendant of the affected obligation of this Consent Decree identified to EPA and the Court.

XI. DISPUTE RESOLUTION

70. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. Defendant's failure to seek resolution of a dispute under this Section shall preclude Defendant from raising any such issue as a defense to an action by the United States to enforce any obligation of Defendant arising under this Decree.

71. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Defendant sends DOJ and EPA a written Notice of Dispute. Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed 20 Days from the date the dispute arises, unless that period is modified by written agreement. If the Parties cannot resolve a dispute by informal negotiations, then the position advanced by the United States shall be considered binding unless, within 30 Days after the conclusion of the informal negotiation period, Defendant invokes formal dispute resolution procedures as set forth below.

72. Formal Dispute Resolution. Defendant shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by sending DOJ and EPA a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Defendant's position and any supporting documentation relied upon by Defendant.

73. The United States will send Defendant its Statement of Position within 45 Days of receipt of Defendant's Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position

and any supporting documentation relied upon by the United States. The United States' Statement of Position is binding on Defendant, unless Defendant files a motion for judicial review of the dispute in accordance with the following Paragraph. Where appropriate, the United States may allow submission of supplemental statements of position by the parties in dispute.

74. Judicial Dispute Resolution. Defendant may seek judicial review of the dispute by filing with the Court and serving on the United States a motion requesting judicial resolution of the dispute. The motion (a) must be filed within ten Days of receipt of the United States' Statement of Position pursuant to the preceding Paragraph; (b) may not raise any issue not raised in informal dispute resolution pursuant to Paragraph 71, unless the Plaintiffs raise a new issue of law or fact in the Statement of Position; (c) shall contain a written statement of Defendant's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and (d) shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

75. The United States shall respond to Defendant's motion within the time period allowed by the Local Rules of this Court. Defendant may file a reply memorandum, to the extent permitted by the Local Rules.

76. Standard of Review

- a. Disputes Concerning Matters Accorded Record Review. Except as otherwise provided in this Consent Decree, in any dispute brought under Paragraph 72 pertaining to the adequacy or appropriateness of plans, procedures to implement plans, schedules or any other items requiring approval by EPA under this Consent Decree; the adequacy of the performance of work

undertaken pursuant to this Consent Decree; and all other disputes that are accorded review on the administrative record under applicable principles of administrative law, Defendant shall have the burden of demonstrating, based on the administrative record, that the position of the United States is arbitrary and capricious or otherwise not in accordance with law.

- b. Other Disputes. Except as otherwise provided in this Consent Decree, in any other dispute brought under Paragraph 72, Defendant shall bear the burden of demonstrating that its position complies with this Consent Decree and better furthers the objectives of the Consent Decree.

77. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Defendant under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 59. If Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IX (Stipulated Penalties).

XII. INFORMATION COLLECTION AND RETENTION

78. The United States and its representatives, including attorneys, contractors, and consultants, shall have the right of entry into any facility covered by this Consent Decree, at all reasonable times, upon presentation of credentials, to:

- a. monitor the progress of activities required under this Consent Decree;
- b. verify any data or information submitted to the United States in accordance with the terms of this Consent Decree;

- c. obtain samples and, upon request, splits of any samples taken by Defendant or its representatives, contractors, or consultants;
- d. obtain documentary evidence, including photographs and similar data; and
- e. assess Defendant's compliance with this Consent Decree.

79. Upon request, Defendant shall provide EPA or its authorized representative splits of any samples taken by Defendant. Upon request, EPA shall provide Defendant splits of any samples taken by EPA.

80. Until four years after the termination of this Consent Decree, Defendant shall retain, and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate in any manner to Defendant's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States, Defendant shall provide copies of any documents, records, or other information required to be maintained under this Paragraph.

81. At the conclusion of the information-retention period provided in the preceding Paragraph, Defendant shall notify the United States at least 90 Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States, Defendant shall deliver any such documents, records, or other information to EPA. Defendant may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege

recognized by federal law. If Defendant asserts such a privilege, it shall provide the following:

(a) the title of the document, record, or information; (b) the date of the document, record, or information; (c) the name and title of each author of the document, record, or information; (d) the name and title of each addressee and recipient; (e) a description of the subject of the document, record, or information; and (f) the privilege asserted by Defendant. However, no documents, records, or other information created or generated pursuant to the requirements of this Consent Decree shall be withheld on grounds of privilege.

82. Defendant may also assert that information required to be provided under this Section is protected as Confidential Business Information (“CBI”) under 40 C.F.R. Part 2. As to any information that Defendant seeks to protect as CBI, Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

83. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States pursuant to applicable federal laws, regulations, or permits, nor does it limit or affect any duty or obligation of Defendant to maintain documents, records, or other information imposed by applicable federal or State laws, regulations, or permits.

XIII. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

84. This Consent Decree resolves the civil claims of the United States for the violations alleged in the Complaint filed in this action through the Date of Lodging.

85. The United States reserves all legal and equitable remedies available to enforce the provisions of this Consent Decree. This Consent Decree shall not be construed to limit the rights of the United States to obtain penalties or injunctive relief under the Act or implementing regulations, or under other federal laws, regulations, or permit conditions, except as expressly

specified in Paragraph 84. The United States further reserves all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Defendant's Facility, whether related to the violations addressed in this Consent Decree or otherwise.

86. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, civil penalties, other appropriate relief relating to the Facility or Defendant's violations, Defendant shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 84.

87. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Defendant is responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits; and Defendant's compliance with this Consent Decree shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States does not, by its consent to the entry of this Consent Decree, warrant or aver in any manner that Defendant's compliance with any aspect of this Consent Decree will result in compliance with provisions of the Act, or with any other provisions of federal, State, or local laws, regulations, or permits.

88. This Consent Decree does not limit or affect the rights of Defendant or of the United States against any third parties, not party to this Consent Decree, nor does it limit the

rights of third parties, not party to this Consent Decree, against Defendant, except as otherwise provided by law.

89. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree.

XIV. COSTS

90. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the civil penalty or any stipulated penalties due but not paid by Defendant.

XV. NOTICES

91. Unless otherwise specified in this Decree, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and sent by mail or email, with a preference for email), addressed as follows:

As to the United States Department of Justice:

By email:
eescdcopy.enrd@usdoj.gov
Re: DJ # 90-5-2-1-12589

As to EPA:

R5aecab@epa.gov
mcauliffe.mary@epa.gov

As to Republic Steel:

Republic Steel
2633 8th St. NE
Canton, OH 44704
Attn: Associate General Counsel
Email: mwalker@republicsteel.com

92. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

93. Notices submitted pursuant to this Section shall be deemed submitted upon mailing or transmission by email, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XVI. EFFECTIVE DATE

94. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket; provided, however, that Defendant hereby agrees that it shall be bound to perform duties scheduled to occur prior to the Effective Date. In the event the United States withdraws or withholds consent to this Consent Decree before entry, or the Court declines to enter the Consent Decree, then the preceding requirement to perform duties scheduled to occur before the Effective Date shall terminate.

XVII. RETENTION OF JURISDICTION

95. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections XI (Dispute Resolution) and XVIII (Modification), or effectuating or enforcing compliance with the terms of this Decree.

XVIII. MODIFICATION

96. The terms of this Consent Decree, including any attached appendices, may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court.

97. Any disputes concerning modification of this Decree shall be resolved pursuant to Section XI (Dispute Resolution), provided, however, that, instead of the burden of proof provided by Paragraph 76, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

XIX. TERMINATION

98. Defendant shall operate the Flexcast VTD Emissions Control System and Cooling Tower Emissions Control System for a period of two years, and maintain continuous satisfactory compliance with the Flexcast VTD Control System Parameter Values and Cooling Tower Control System Parameter Values for a period of at least two years before seeking to terminate this Consent Decree. Defendant shall obtain Title I and Title V permit modifications consistent with Paragraph 31 through 33 before seeking to terminate this Consent Decree.

99. After Defendant has completed the requirements of Section VI (Compliance Requirements), has thereafter maintained continuous satisfactory compliance with this Consent Decree and Defendant's permit for a period of two years, has complied with all other requirements of this Consent Decree, and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, Defendant may serve upon the United States a Request for Termination, stating that Defendant has satisfied those requirements, together with all necessary supporting documentation.

100. Following receipt by the United States of Defendant's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States agrees that the Decree may be

terminated, the Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

101. If the United States does not agree that the Decree may be terminated, Defendant may invoke Dispute Resolution under Section XI (Dispute Resolution). However, Defendant shall not seek Dispute Resolution of any dispute regarding termination until 45 Days after service of its Request for Termination.

XX. PUBLIC PARTICIPATION

102. This Consent Decree shall be lodged with the Court for a period of not less than 30 Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Defendant consents to entry of this Consent Decree without further notice and agrees not to withdraw from or oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendant in writing that it no longer supports entry of the Decree.

XXI. SIGNATORIES/SERVICE

103. Each undersigned representative of Defendant and the undersigned representative of the Environment and Natural Resources Division of the Department of Justice identified on the DOJ signature page below, certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

104. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Defendant agrees to accept service of process by mail with respect to

all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons. Defendant need not file an answer to the complaint in this action unless or until the Court expressly declines to enter this Consent Decree.

XXII. INTEGRATION

105. This Consent Decree, including deliverables that are subsequently approved pursuant to this Decree, constitutes the entire agreement among the Parties regarding the subject matter of the Decree and supersedes all prior representations, agreements and understandings, whether oral or written, concerning the subject matter of the subject matter of the Decree herein.

XXIII. 26 U.S.C. SECTION 162(f)(2)(A)(ii) IDENTIFICATION

106. For purposes of the identification requirement in Section 162(f)(2)(A)(ii) of the Internal Revenue Code, 26 U.S.C. § 162(f)(2)(A)(ii), and performance of Section III (Applicability) Paragraphs 3-6; Section VI (Compliance Requirements); Section VIII (Reporting Requirements); Section XII (Information Collection and Retention) Paragraphs 78-81; and Appendix A is restitution, remediation, or required to come into compliance with law.

XXIV. HEADINGS

107. Headings to the Sections and Subsections of this Consent Decree are provided for convenience and do not affect the meaning or interpretation of the provisions of this Consent Decree.

XXV. FINAL JUDGMENT

108. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States and Defendant. The

Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Federal Rules of Civil Procedure 54 and 58.

XXVI. APPENDICES

109. The following Appendices are attached to and part of this Consent Decree:

“Appendix A” is the Design Plan and Parameters for the Cooling Tower
Emission Control System

Dated and entered this 18th day of December, 2023

/s/ John R. Adams

UNITED STATES DISTRICT JUDGE

FOR THE UNITED STATES OF AMERICA:

TODD KIM
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice

9/19/2023

Date

s/ Samantha M. Ricci

SAMANTHA M. RICCI
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-3856
Email: samantha.ricci@usdoj.gov


REBECCA C. LUTZKO
United States Attorney
Northern District of Ohio

J. JACKSON FROLIKLONG
Assistant United States Attorney
United States Courthouse
801 West Superior Ave., Suite 400
Cleveland, OH 44113
Phone: (216) 622-3818
Email: jfroliklong@usdoj.gov

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY:


Date

**ROBERT
KAPLAN**

 Digitally signed by ROBERT KAPLAN
Date: 2023.09.14 16:56:35 -05'00'

ROBERT A. KAPLAN
Regional Counsel
U.S. Environmental Protection Agency
Region 5 (C-14J)
77 West Jackson Boulevard
Chicago, IL 60604

**MARY
MCAULIFFE**

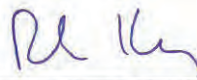
 Digitally signed by MARY
MCAULIFFE
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MARY T. McAULIFFE
Associate Regional Counsel
U.S. Environmental Protection Agency
Region V (C-14J)
77 West Jackson Blvd.
Chicago, IL 60604-3590

FOR REPUBLIC STEEL:

9/12/23

Date




ROBERT KOURY
Chief Executive Officer
2633 8th St. NE
Canton, OH 44704

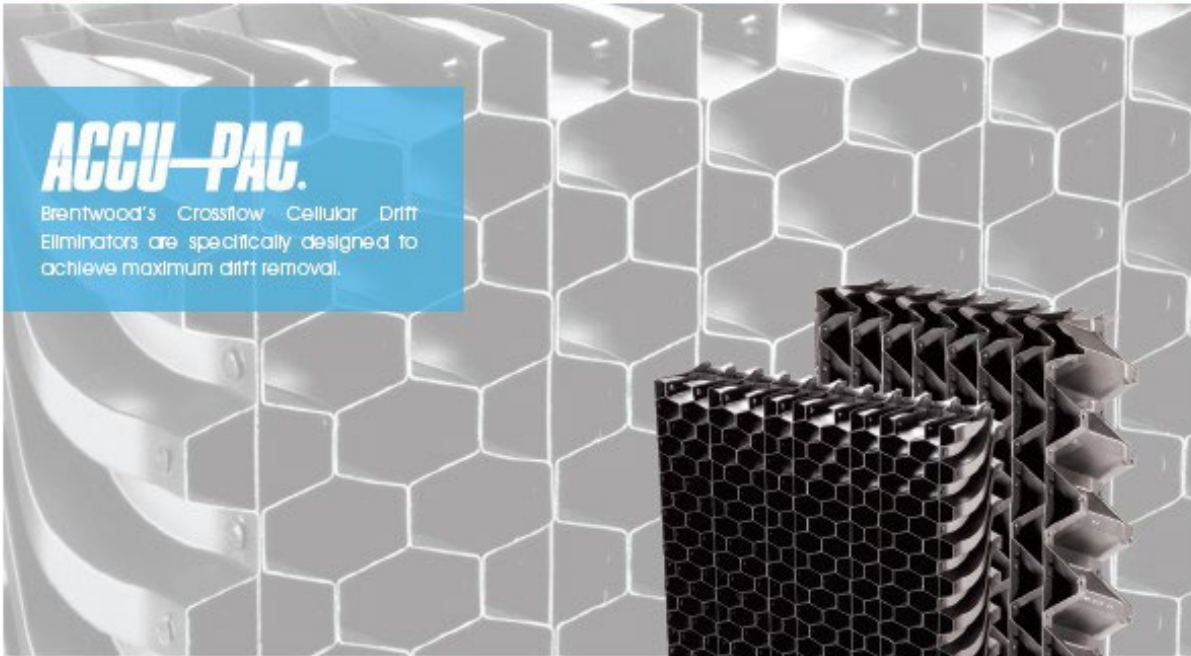
6- February 23, 2022

OBR Cooling Towers

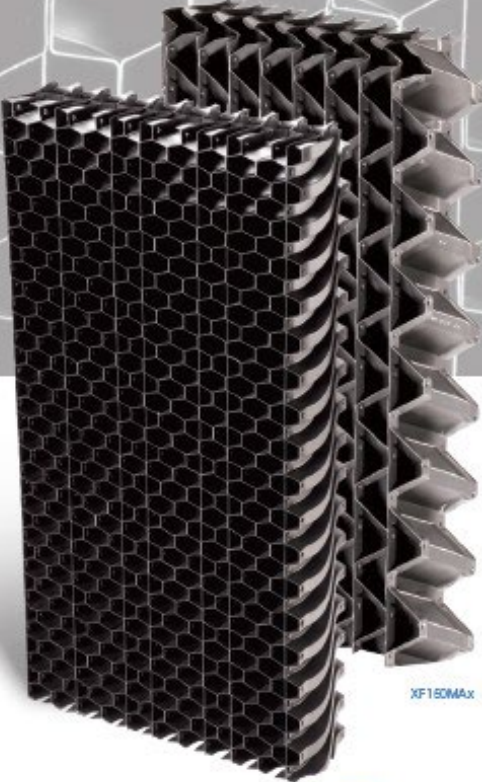
Appendix: A



CROSSFLOW CELLULAR DRIFT ELIMINATORS



ACCU-PAC.
Brentwood's Crossflow Cellular Drift Eliminators are specifically designed to achieve maximum drift removal.




XF80Max

XF150Max

Features

- Upward flow path and steep water drainage angle maximize drift removal efficiency.
- Patented Mechanical Assembly technology yields glue-free packs.
- Modules nest with adjoining modules, eliminating gaps and providing seamless drift removal.
- Can be field-cut for tight fits without sacrificing structural integrity.
- Able to span up to 10 feet, requiring fewer supports to minimize air blockage.
- UV-protected material meets Cooling Technology Institute (CTI) Standard 136.
- Available with AccuShield technology.

**BRENTWOOD®**



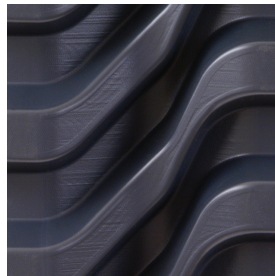
Crossflow Cellular Drift Eliminators

Brentwood's AccuPac® Crossflow Cellular Drift Eliminators are constructed of an alternating series of corrugated and wave PVC sheets, assembled to form closed cells. The closed cell structure yields the greatest surface area for droplet capture in a given volume. Brentwood's latest generation of cellular drift eliminators are specifically engineered for crossflow applications to maximize drift removal efficiency and minimize pressure drop.

Benefits

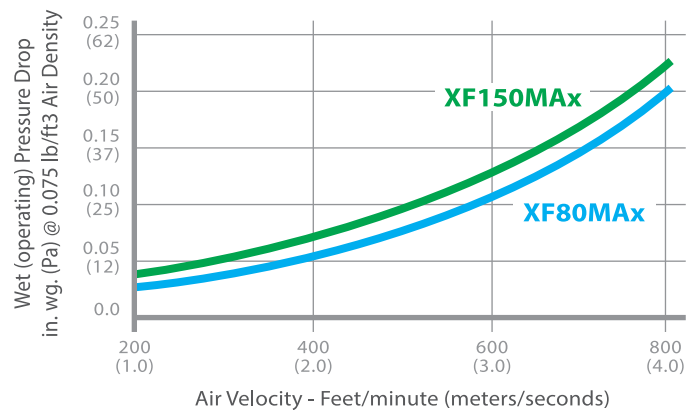
XF80MAx

XF80MAx provides the best efficiency of any crossflow drift eliminator on the market today, with drift loss of 0.0005%. The upward flow path and steep water drainage angle make the product fully effective when installed vertically, and XF80MAx features a tuned venturi design that increases exit airflow velocity and eliminates smaller droplets.



Tuned Venturi Design

PRESSURE DROP

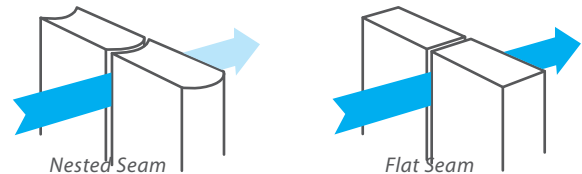


XF150MAx

For applications where extremely low drift ratings are not required, XF150MAx provides a cost-effective solution with drift loss of 0.001%.

NESTED VS. FLAT SEAMS

Brentwood drift eliminators utilize a nested seam, which provides for reduced bypass compared to flat-seam designs.



CROSSFLOW CELLULAR DRIFT ELIMINATOR PRODUCT DETAILS

Model	Cell Size	Module Dimensions - Inches (mm)			Sheet Thickness*	Dry Weight	Max. Span**	Drift Loss
		Depth	Width	Standard Lengths				
XF80MAx*** ECC Diploma no. 10.02.456	0.86" (21.8 mm)	5.25" (133 mm)	24" (610 mm) Nominal	36 - 144" (610-3658 mm)	Standard: 0.013 in (0.33 mm)	1.1 lbs/ft² (5.4 kg/m²)	8 ft (2.4 m)	0.0005%
XF150MAx*** ECC Diploma no. 10.02.457	1.50" (38.1 mm)	5.25" (133 mm)	12" (305 mm), 18" (457 mm)	36 - 144" (610-3658 mm)	Standard: 0.015 in (0.38 mm)	1.0 lbs/ft² (4.9 kg/m²)	8 ft (2.4 m)	0.001%
					Heavy Duty: 0.020 in (0.51 mm)	1.4 lbs/ft² (6.8 kg/m²)	10 ft (3 m)	

* Nominal thickness after forming.

** Tested at a maximum air temperature of 115°F (46°C) with 2-in (51 mm) wide supports.

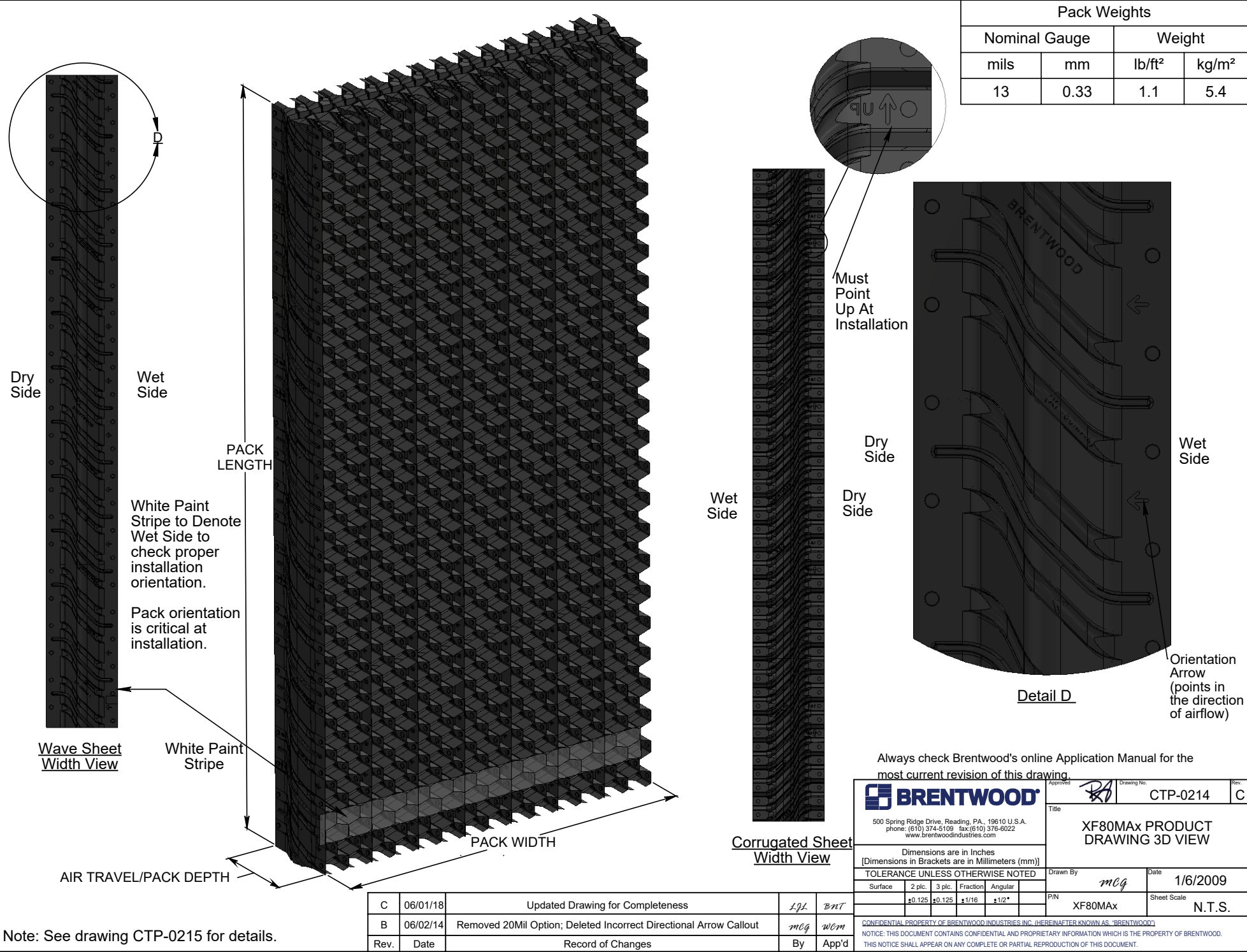
*** XF80MAx and XF150MAx have been third-party tested and are compliant with Eurovent performance standards. These standards are not linked with Brentwood's published drift ratings. Brentwood participates in the ECP programme for Drift Eliminators. Check on-going validity of certificate: www.eurovent-certification.com.



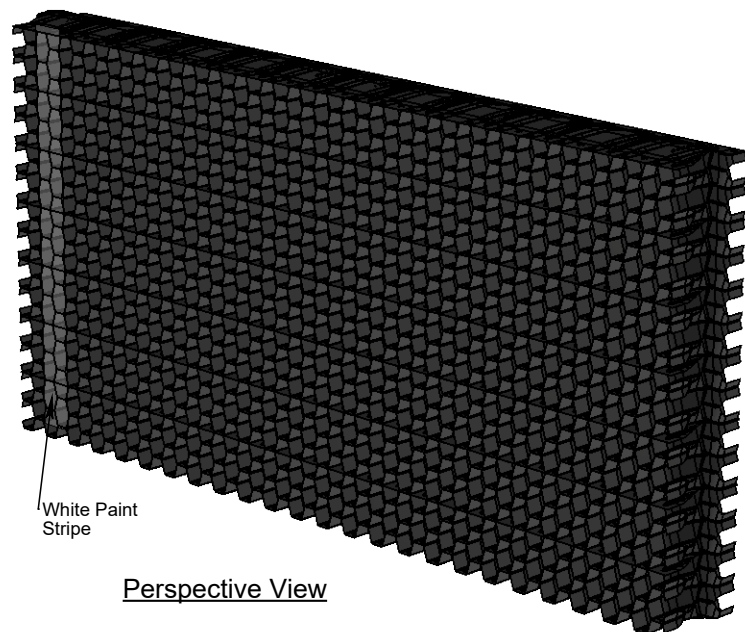
BRENTWOOD INDUSTRIES, INC.

brentwoodindustries.com
coolingtower@brentw.com
+1.610.236.1100

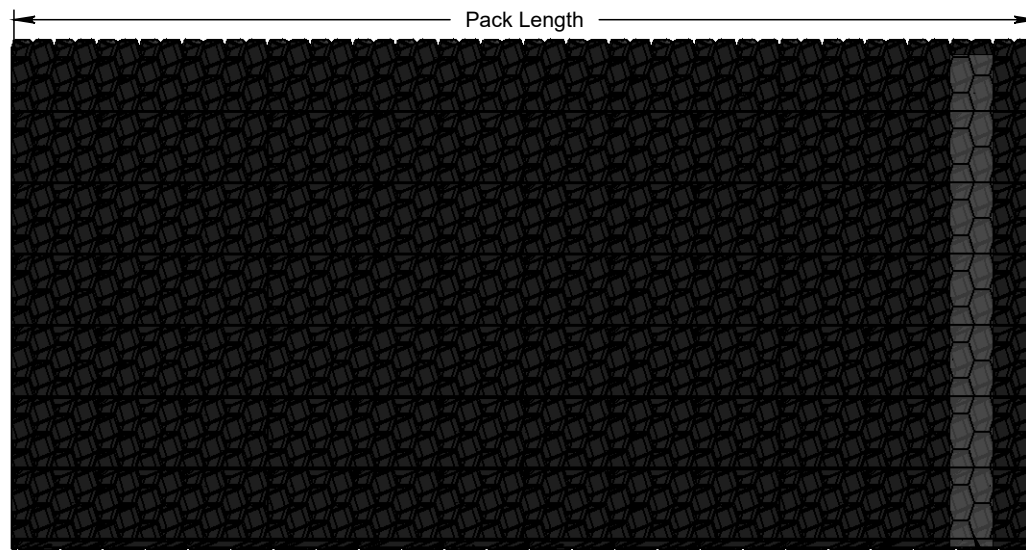




Note: See drawing CTP-0215 for details.

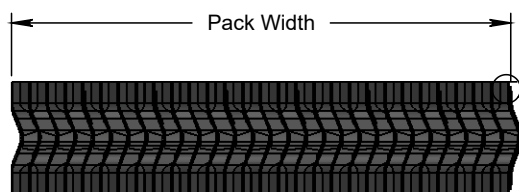


Perspective View

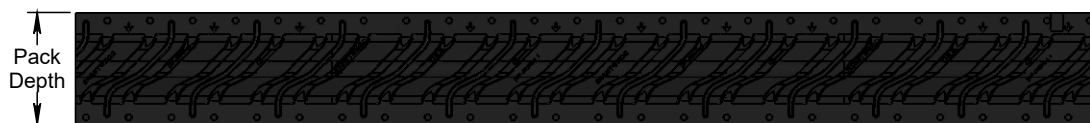


Top View

White Paint Strip to Denote Wet Side to check proper installation orientation.



Side View



Front View

Notes:

Material: Rigid PVC meeting CTI Specification Std-136 with UV inhibitor; black with matte finish.

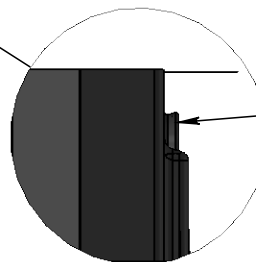
Standard Air Travel Pack Depth: 5.25" [133]

Standard (and Maximum) Pack Width: 24-3/8" [619], other pack widths available in increments of 3.472" [88.2]

Pack Length Up to 144" [3658]

Standard Gauge- 13mil [0.33] nominal after forming.

Pack Tolerances: Depth +1/8 [3.2]/-0; Width $\pm 1/8$ [3.2]; Length $\pm 1/8$ [3.2].



Note: Pack Width Measured to Top of Crushed MA Cone Set

Always check Brentwood's online Application Manual for the most current revision of this drawing.

<p>500 Spring Ridge Drive, Reading, PA, 19610 U.S.A. phone: (610) 374-5109 fax: (610) 376-6022 www.brentwoodindustries.com</p>		Approved	Drawing No.	Rev.										
			CTP-0215	D										
<p>Dimensions are in Inches [Dimensions in Brackets are in Millimeters (mm)]</p> <p>TOLERANCE UNLESS OTHERWISE NOTED</p> <table border="1"> <thead> <tr> <th>Surface</th> <th>2 plc.</th> <th>3 plc.</th> <th>Fraction</th> <th>Angular</th> </tr> </thead> <tbody> <tr> <td></td> <td>± 0.125</td> <td>± 0.125</td> <td>$\pm 1/16$</td> <td>$\pm 1/2^\circ$</td> </tr> </tbody> </table>		Surface	2 plc.	3 plc.	Fraction	Angular		± 0.125	± 0.125	$\pm 1/16$	$\pm 1/2^\circ$	<p>Title</p> <p>XF80MAx PRODUCT DRAWING TOP, FRONT, SIDE VIEWS</p>		
Surface	2 plc.	3 plc.	Fraction	Angular										
	± 0.125	± 0.125	$\pm 1/16$	$\pm 1/2^\circ$										
<p>Drawn By</p> <p></p>		<p>Date</p> <p>1/6/2009</p>												
<p>P/N</p> <p>XF80MAx</p>		<p>Sheet Scale</p> <p>N.T.S.</p>												
<p>CONFIDENTIAL PROPERTY OF BRENTWOOD INDUSTRIES INC. (HEREINAFTER KNOWN AS "BRENTWOOD") NOTICE: THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION WHICH IS THE PROPERTY OF BRENTWOOD. THIS NOTICE SHALL APPEAR ON ANY COMPLETE OR PARTIAL REPRODUCTION OF THIS DOCUMENT.</p>														

D	05/02/14	Removed 20Mil Option	mlg	wcm
C	03/21/11	Pack Increment was 3.482 [88.4]	mlg	RA
Rev.	Date	Record of Changes	By	App'd



Crossflow Drift Rate Qualifications

Drift Eliminator Performance Qualifications

In order to meet the specified drift rate the following qualifications shall be followed:

Design Qualifications

1. To obtain published performance there shall be adequate plenum space provided in the tower to lessen air velocity peaks and turbulence at the plane of the drift eliminators.
2. Drift eliminators shall be positioned outside of an imaginary cylinder projected downward from the fan cut-hole circle in the fan deck.
3. There shall be adequate clearance between the trailing edge of the fill and the leading edge of the drift eliminators to prevent direct impingement of water onto the drift eliminator panels. In towers with splash fill this distance shall not be less than 18in (457mm) in the upper-most bay and not less than 24in (610mm) in the bottom-most bay.
4. The drift eliminator panels shall be installed on no less than a 10° slant angle (with respect to the vertical) into the airstream in all the bays.
5. In order to maximize the drainage and drift elimination efficiency, drift eliminators shall be installed on Brentwood XF600 DE Supports at every vertical lift, and vertical lifts shall be limited to 72in (1.83m) or less in height.
6. Any transitions or set-back changes into the plenum of the drift eliminator plane between adjacent lifts shall be fully sealed to keep the water on the "wet" or "fill" side of the drift eliminators.
7. Air seals are required to prevent air from bypassing the drift eliminator section through the spray zone at the top of the section and at the bottom of the drift eliminator section underneath the drift eliminators. Bottom air seals are required to extend at least 6in (152mm) below the normal operating waterline.
8. The nozzle spray shall not impinge directly on the drift eliminator panels.

Installation Qualifications

9. The eliminator panels shall be installed to fully nest from side-to-side and to provide the tightest possible fit between adjacent panels.
10. The drift panels shall be carefully cut or trimmed to fit tightly against any obstruction, cell partition, or sidewall to prevent air bypass. Brentwood Dri-Seals shall be used to seal beam penetrations and be placed on both sides ("wet" or "fill" side and "dry" or "plenum" side) of the drift eliminator panels.
11. Diagonal support penetrations and all other miscellaneous penetrations shall be sealed with closed cell foam to eliminate any possible gaps that would allow air to bypass.
12. Closed-shape FRP structural members may require additional sealing to prevent water intrusion into the plenum from water that enters the closed-shape structure, for example a rectangular tube, in the wet section of the cooling tower and then penetrates the plane of the drift eliminators. Water that is able to enter the closed-shape structure and is able to enter the plenum could then exit the structural member within the plenum and become drift.

Cooling Tower Operating Qualifications

13. Drift rate predictions are based on the design average value of air velocity, i.e., average values not less than 450ft/min (2.3m/s) and not more than 700ft/min (3.5m/s) at the drift eliminator plane and fill water loading between 9gpm/ft² (22m³/hr·m²) and 20gpm/ft² (49m³/hr·m²). Operation of the tower by more than +/- 10% of these average air velocity values will result in drift in excess of the predicted value and void any guarantee.
14. Proper operation of the drift eliminators is related to uniformity of air flow. Excessive air velocity leads to excessive drift. To achieve a stated drift level the peak air velocity at any point along the drift eliminators shall not exceed 800ft/min (4.0m/s).



GLOBAL HEADQUARTERS Phone: +1.610.374.5109 Email: coolingtower@brentw.com
EUROPE Phone: +420.371.595.795 Email: europesales@brentw.com
THAILAND Phone: +662.694.1060.2 Email: asiasales@brentw.com
INDIA Phone: +91.265.2333995 Email: indiasales@brentw.com
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Crossflow Drift Rate Qualifications

15. Hot water basins shall be completely leak-tight and balancing valves shall be set for uniform water levels in all basins. Operation of the tower with improperly set distribution valves and/or excessive water velocities causing hot water basin overboarding will void any guarantee.
16. The PVC material used to make the drift eliminators resists wetting when new. This wetting resistance will diminish over time through normal operation of the cooling tower under heat load. This process (commonly called "aging" or "conditioning") and the subsequent published performance may not be achieved until the drift eliminators are fully aged, which shall require at least 1000 hours of normal operation with full heat load.
 - a. NOTE: Very low concentrations of TDS in circulating water or the use of soft water will require additional time in order for the drift eliminators to reach their full wetting potential.
17. Certain water treatment chemicals affect the drift rate by adversely affecting water surface tension. Reduced surface tension increases the population of very small droplets that is produced by the air-water interaction within the cooling tower. The smallest of these droplets can become fluidized in the exhaust air stream passing largely unimpeded through the drift eliminators. These surface acting chemicals are called surfactants and include most biocides, scale inhibitors, and some non-oxidizing biocides. Pure water at 122°F (50°C) has a surface tension of 68dynes/cm. To minimize small droplets becoming fluidized the surface tension of the circulating water shall not fall below 63dynes/cm, which is equivalent to pure water at 176°F (80°C). When testing drift emissions all surface-active additives shall be discontinued 72 hours prior to and throughout the entire test period.
 - a. Testing of surface tension shall be done on the circulating water on site every day of testing using the Du Noüy Ring Method in order to ensure that the water properties have not varied outside of the allowable range.
18. Oil and grease concentrations shall not exceed 1ppm.
19. The air temperature through the drift eliminators shall not exceed 115°F (46°C) for PVC or 125°F (51°C) for HPVC constructed eliminators.

Drift Eliminator Testing Qualifications

20. To assure an unbiased and accurate drift test the Cooling Technology Institute (CTI) Drift Test Code ATC-140 (current revision) shall be followed.
21. The test agency shall be approved by all parties and be a CTI licensed drift testing agency.
22. Testing shall not occur during periods when the plenum is wet due to condensation accumulation.

Tower Applicability Notes:

- A. The above guidelines apply to traditional splash bars, such as Alpha Bar, Omega Bar, Gull-Wing, V-Bar, Kelly Bar, Lath, Pi Bar, etc. The latest generation of splash bars, such as Mesa Bar, Opti-Bar, and Arch Bar, generate smaller droplets which cause reduced drift removal efficiencies.
- B. For factory assembled ("package") crossflow towers, the following modifications apply:
 - a. Item# 4 – Installed angle of 5° is allowable for the separate DE if installation also includes Integral DE's (ID).
 - b. Item# 5 – If using OEM or other supports, they must include drain boards to direct collected water away from the DE's. Use of Brentwood's XF600, while recommended if possible, is not required as long as the alternate supports offer the same functionality as the XF600. Lifts are allowed to match modular tower section heights, but drain boards are required between modules and must prevent flooding of the lower DE from upper fill & DE water.
 - c. Item# 7 - Bottom air seals are required to extend at least 2in (25.4mm) below the operating waterline at all operating conditions, or, if that is not possible, extend low enough to prevent air bypass below the DE's while tower is in operation.
 - d. Item# 13 – Fill water loading limits for film fills may vary between 10-40gpm/ft² (25-98m³/hr-m²).
 - e. Refer to Application Note: **General Gauge and Installation Guidelines for the XF75 Fill System in Package Crossflow Towers** for drift eliminator configuration recommendations based on tower configurations and operating conditions.



GLOBAL HEADQUARTERS Phone: +1.610.374.5109 Email: coolingtower@brentw.com
 EUROPE Phone: +420.371.595.795 Email: europesales@brentw.com
 THAILAND Phone: +662.694.1060.2 Email: asiasales@brentw.com
 INDIA Phone: +91.265.2333995 Email: indiasales@brentw.com
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—
VARIABLE SPEED MOTORS

Direct drive cooling tower motor and drive system

For industrial applications

BALDOR • RELIANCE







New direct drive technology

Improves reliability, reduces maintenance, runs quieter and saves energy

By combining the technologies of the field proven and power dense AC laminated frame RPM AC motor with high performance permanent magnet (PM) salient pole rotor designs and the matched performance of an adjustable speed drive, ABB can offer high torque direct drive motors for cooling tower applications. The direct drive solution offers the benefits of variable speed control and eliminates the cost and maintenance required for traditional gearboxes or belted solutions. The fan couples directly to the motor and is controlled by a unique AC drive to provide optimal speed and cooling tower performance that runs quieter with reduced energy consumption. The drive is designed to accommodate the most common industrial communication protocols.

Direct drive RPM AC synchronous PM motor reduces maintenance cost

The RPM AC™ synchronous PM motor uses laminated finned frame construction to provide a highly efficient power dense package with flange mounting dimensions that can replace the right angle gearbox and jack shaft installation in many conventional cooling towers. This same technology is offered in conventional, yet power dense, foot mounted designs that can replace the belt and sheave application where more vertical mounting space is available. Derived from one of the toughest motor platforms used in the most demanding industrial applications, the RPM AC motor is the right solution for operation inside the tower's hot and humid environment. The TEAO (totally enclosed air over) RPM AC cooling tower motor is designed for minimal maintenance. Bearings require lubrication only once per year. Water ingress along the shaft is prevented with the use of an Inpro/Seal® bearing isolator and a slinger. The electrical insulation system is manufactured using a VPI (vacuum pressure impregnation) process that ensures long motor life even in the most extreme environmental conditions. Condensation drains relieve any moisture that may collect inside the motor. No more changing gear oil, lubricating pillow block bearings or changing out belts.

ABB ACS880 cooling tower drive*

The ABB ACS880 cooling tower drive utilizes our Matched Performance philosophy to ensure trouble-free operation with the Baldor-Reliance RPMAC Permanent Magnet Cooling Tower Motor Family. The drive also provides custom features for

the Cooling Tower Industry including Trickle Current Motor Heating, Locked Motor Rotor functionality to prevent wind-milling when not enabled, De-ice Mode, Accelerometer Feedback and RTD Temperature Feedback. Additionally, much complexity is reduced in the Cooling Tower Drive by removing all of the General Purpose Drive Parameters and only providing the necessary Cooling Tower Drive Parameters, allowing for easy configuration and start-up. The ABB Cooling Tower Drive also provides a Quick Start Assistant specifically for cooling tower applications making start-up simple and straight-forward.

Field tested reliability

After extensive Lab testing, motor and drive systems have been installed and field tested for extended periods of time. One system is running under a controlled environment on one of two identical cooling towers at Clemson University. Both towers were instrumented and the traditional geared system was evaluated against the Baldor-Reliance CT Direct Drive Solution. Each tower had the same 5 blade, 18 foot diameter fan, with pitch and tip clearance adjusted to identical settings. Performance results, which were verified by a third party reduced losses in the system by approximately 50% and provided a measured input kW power savings of 11.8% compared to a traditional geared system, with high speed noise reduction from 82.3 dBA to 74.4 dBA and reduced vibration.

*ACS880 cooling tower drive specified with "+N5350" variant code.



RPM AC direct drive cooling tower

Features and benefits

Direct drive motor

- Eliminates the need for a gearbox, jack shaft, pillow block bearings and couplings
- Reduces maintenance and provides improved reliability
- Eliminates cooling water contamination by eliminating gearbox oil and leakage
- Reduces power consumption
- Results in increased safety due to removal of rotating equipment.
- Water-tight motor design operates in the air stream
- Eliminates the alignment of mechanical components for quicker installation, reduced installation costs and increased system efficiency

Bearings and seals

- Oversized to maintain longer bearing life exceeding L-10 100,000 hours
- Grease lubricated for long life
- Handles fan loads with improved reliability
- Proven Inpro/Seal® bearing isolator
- Only one ingress point
- Insulated opposite drive end bearing on FL440 and FL5800

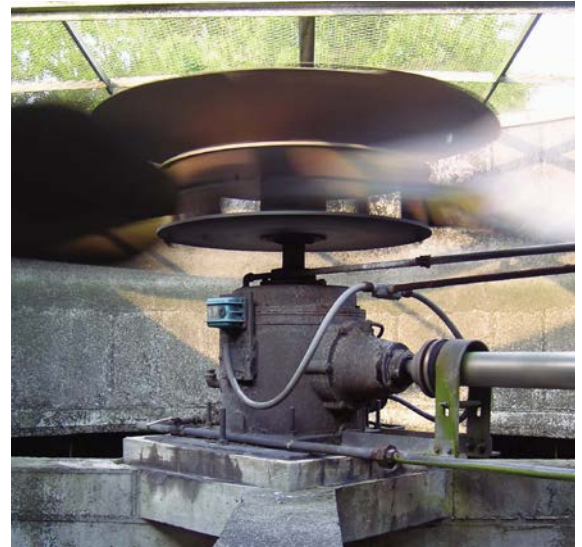
Adjustable speed control

- Designed specifically for the Cooling Tower Industry and can be set at the optimum speed point (+N5350)
- Sensorless Permanent Magnet motor control operates without an encoder or resolver
- Trickle heating eliminates need for motor space heaters
- Guaranteed Compatibility due to the Matched Performance of the motor and drive
- Allows for a soft start (controlled ramp)
- Saves energy and reduces mechanical stress on the system 30 – 60%
- Improves system reliability and extends life
- Reduces noise

- Trickle current for braking prevents fan windmilling when not in operation
- System resonance speeds can be bypassed
- +P934 Drive Care Warranty provides a 5 Year Warranty on the Drive with a Preventative Maintenance on the Drive at 3 Years.

Communication protocols

When system automation control and monitoring is a requirement for your cooling tower operation, the ABB Cooling Tower Drive easily communicates with all the Industrial Communication Networks including Ethernet/IP, DeviceNet, Profibus-DP, CANopen, MODBUS/TCP, PROFINET, MODBUS-RTU and EtherCAT.



A typical conventional fan drive arrangement of a gearbox mounted under the fan.

Optimized cooling tower performance

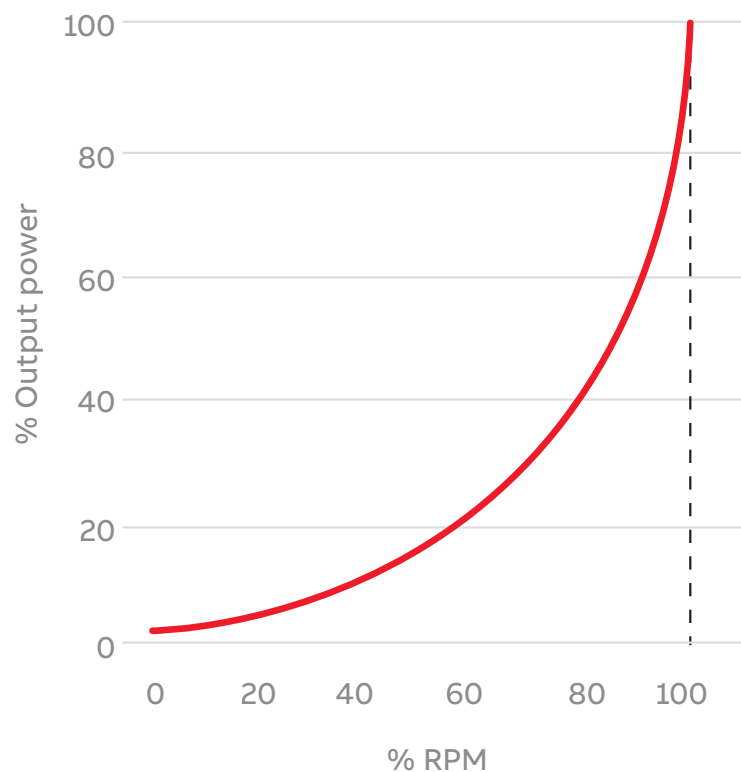
Energy savings even under low load conditions

By optimizing motor speed considerable energy can be saved. The entire cooling tower system must be designed for the “Worst Case” (or highest air flow) scenario. For optimum system performance the fan may need to operate at reduced speed.

As the speed of the motor is decreased, the air flow drops in a corresponding linear fashion. So, for example, if the motor runs at only 50% speed, the air flow is correspondingly reduced to 50% of maximum air flow.

However, the input power to the motor varies with the cube of the motor speed. For example, if a motor is run at half-speed, the power consumed by the motor is 12.5% or $1/8$ [i.e. $(\frac{1}{2})^3$] of the power consumed at full speed. So, if the needed airflow can be achieved by running at half-speed, it is possible to save a large amount of energy (see energy chart below).

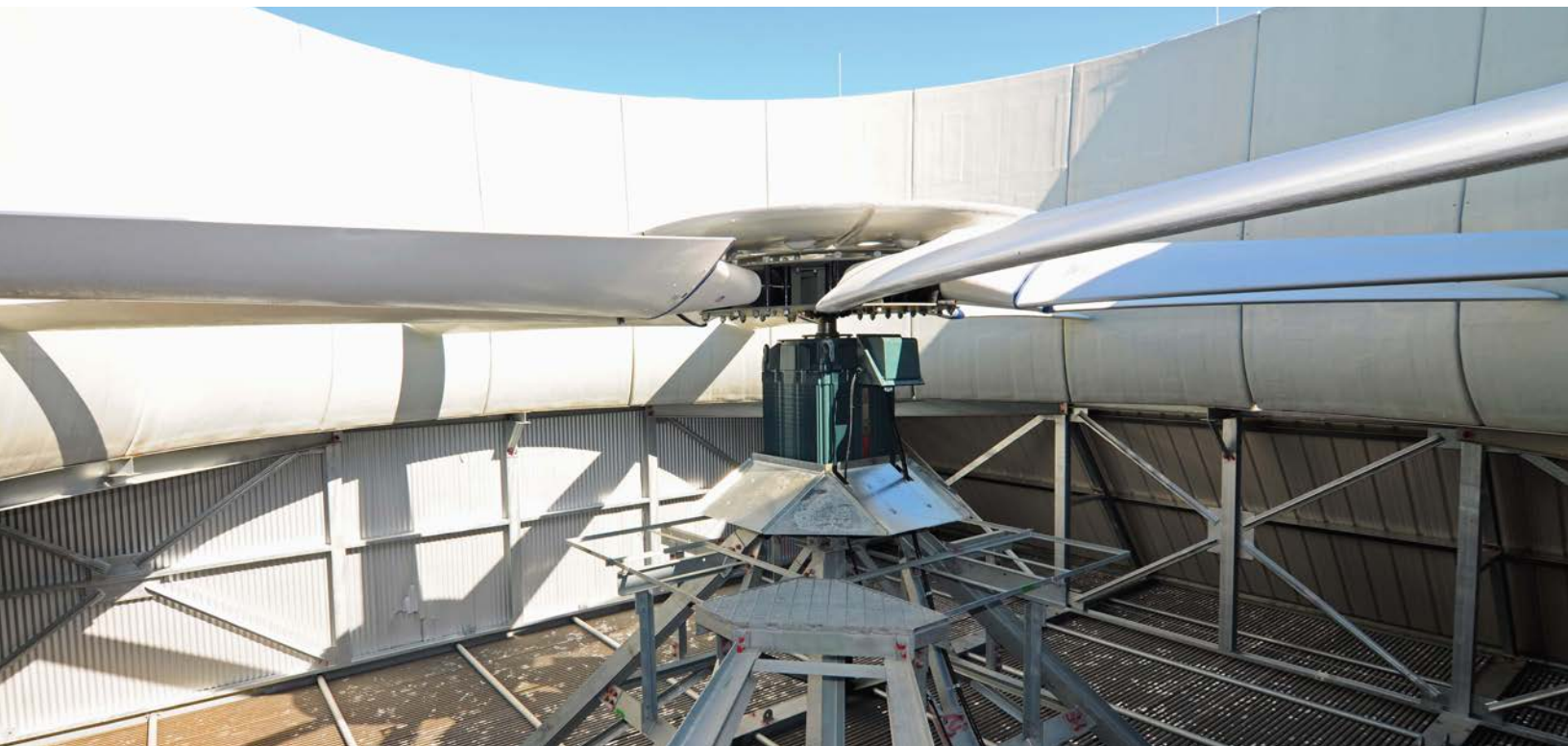
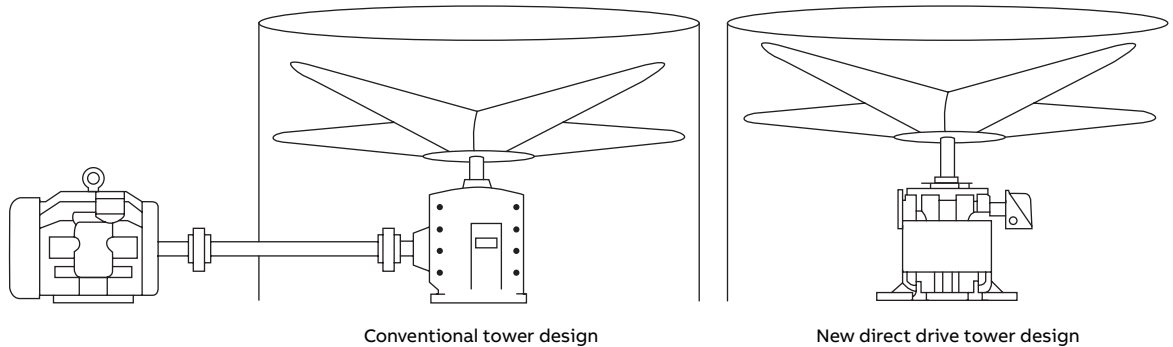
Adjustable speed saves energy



Retrofit or new tower designs

—
A direct drive motor eliminates many components of a right angle geared system.

RPM AC Cooling tower motors are flange mount designed to be interchangeable with many popular gearbox bolt hole mounting configurations. Shaft height, diameter and flange mounting dimensions can be directly interchangeable with some existing cooling tower gearbox. Higher motor torque ratings are available using taller motors when space is available. Flange mount designs are available in a wide torque range in frame sizes FL250, FL280, FL320, FL360, FL400, FL440, and FL5800



RPM AC cooling tower wizard

Motor design and selection tool

The RPM AC cooling tower wizard – Design tool

The RPM AC cooling tower wizard is a comprehensive motor and drive selection program that allows the user to specify as few as three parameters; (motor Hp, fan speed, air flow over the motor) and then calculate a direct drive motor and drive solution in either a stock offering or a custom design.

Additional features built in the wizard provide an annual cost of operation analysis estimation between a direct drive solution and a traditional/existing gearbox or belted application. The input data for this calculation is fully customizable to your current operating conditions to allow the most accurate cost savings estimation. Full performance data packets and dimensional drawings are also available through the wizard. To download your wizard just go on line to <https://www.baldor.com/brands/baldor-reliance/customer-resources/software-resources/cooling-tower-wizard-software>.

CT RPM AC Cooling Tower Wizard

File Settings Help

Rating: 40 HP Voltage: 460 V

Speed: 197 RPM Motor Ambient: 40 °C 104 °F

Height: in Altitude: 3300 ft

Class: F rise Air Velocity: 750 ft/min

Class I, Div. 2, Groups A, B, C, D
Class II, Div. 2, Groups F, G T3

Calculate Cost of Operation ☒ Performance Data

Custom Motor		Stock Motor	
Frame Size	FL3614	Motor Catalog #	DDCTRPM3601
Current	47.0 Amps	Frame Size	FL3614
Efficiency	90.7 %	Current	59.9 Amps
Motor Height	28.43 in	Efficiency	90.7 %
Drive Catalog #	ACS880-01-052A-5	Motor Height	28.43 in
Drive Frame	R4	Drive Catalog #	ACS880-01-065A-5
		Drive Frame	R5

ABB

RPM AC cooling tower motor and drive Models

We have several stock models available that can fit your application requirements. These models can be selected through the RPM AC cooling tower wizard tool. The RPM AC cooling tower wizard is a comprehensive motor selection tool that allows the user to specify motor parameters.

Motors can be rerated to meet customer specifications or a custom motor can be ordered/specified.

460 volt DDCT motor specifications

Catalog number	Frame	Voltage	Max. torque (lb.ft.)	Minimum required air velocity over the motor (ft./min.)	Drawing number
DDCTRPM2501	FL2562	460	130	750	617549-003
DDCTRPM2502	FL2570	460	175	750	617549-004
DDCTRPM2503	FL2578	460	220	750	617549-005
DDCTRPM2801	FL2882	460	370	750	617557-003
DDCTRPM2802	FL2890	460	440	750	617557-004
DDCTRPM2803	FL2898	460	515	750	617557-005
DDCTRPM3201	FL3213	460	850	750	619668-004
DDCTRPM3601	FL3614	460	1375	750	619666-004
DDCTRPM4001	FL4034	460	1650	750	619664-004
DDCTRPM4002	FL4046	460	1940	750	619664-005
DDCTRPM4003	FL4058	460	2230	750	619664-006

400 volt DDCT motor specifications

Catalog number	Frame	Voltage	Max. torque (Nm)	Minimum required air velocity over the motor (m/s)	Drawing number
DDCTRPM2504	FL2562	400	176	3.81	617549-503
DDCTRPM2505	FL2570	400	237	3.81	617549-504
DDCTRPM2506	FL2578	400	298	3.81	617549-505
DDCTRPM2804	FL2882	400	501	3.81	617557-503
DDCTRPM2805	FL2890	400	596	3.81	617557-504
DDCTRPM2806	FL2898	400	698	3.81	617557-505
DDCTRPM3202	FL3213	400	1152	3.81	619668-504
DDCTRPM3602	FL3614	400	1864	3.81	619666-504
DDCTRPM4004	FL4034	400	2237	3.81	619664-504
DDCTRPM4005	FL4046	400	2630	3.81	619664-505
DDCTRPM4006	FL4058	400	3023	3.81	619664-506

Re-rate stock motors are available

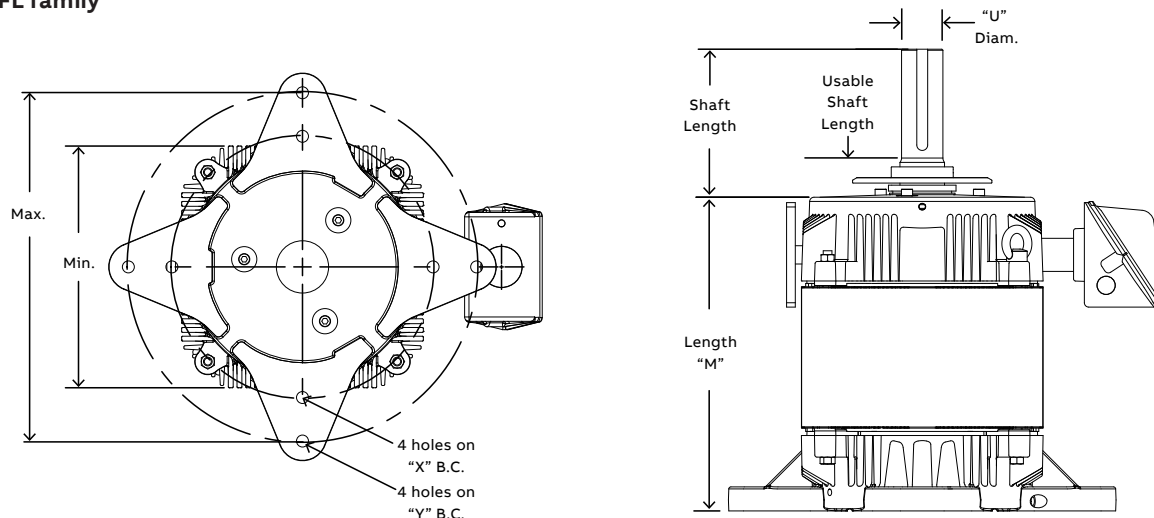
More ratings are available as custom configured motors.

These models are available from our industry leading distribution network

RPM AC cooling tower motor

Dimensions

FL family



Motor frame size	* Typical shaft length	Usable shaft length	* Typical shaft dia. "U"	"X" min. bolt circle (in.)	"Y" max. bolt circle (in.)	Number of holes per bolt circle
FL25XX	8.5	6.94	1.999	14	16	4
FL28XX	8.0, 8.5	5.75, 6.25	2.374	15-16 Slot	20	4
FL32XX	8.0, 8.5	5.88, 6.38	1.99, 2.37	16	20	4
FL36XX	8.5, 9.0, 9.5	6.38, 6.88, 7.38	2.999	20, 22	25**	4
FL40XX	8.5, 9.0, 9.5	6.38, 6.88, 7.38	2.999	22	25	4
FL44XX	8.5, 9.0, 9.5	6.38, 6.88, 7.38	2.999	22	25	4
FL58XX	12.0	6.88, 11.75	4.999	–	34	8

*Shaft length and diameter can vary by application requirements.

**4 holes on three bolt circles.

Tapered shafts are also available. Typical taper is 1/2" per foot. Special non-standard shaft requirements must be defined on the order.

Motor features

- Mounting pad standard on FL58XX frame motors
- Mounting pad optional on 440-frame and smaller motors
- Thermostats one per phase normally closed
- Heavy build external coatings
- Proven Inpro/Seal® bearing isolator with slinger umbrella over seal (58XX-frame motors only)
- Proven insulation system technology used in off-shore drilling applications
- Stator RTD standard on FL58XX frame motors
- Stator RTD optional on 440-frame and smaller motors

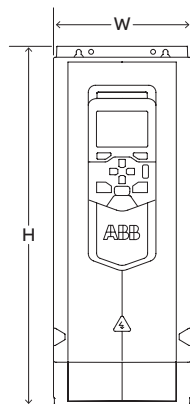
Adjustable speed drive cooling tower

Models

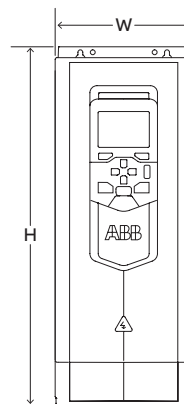
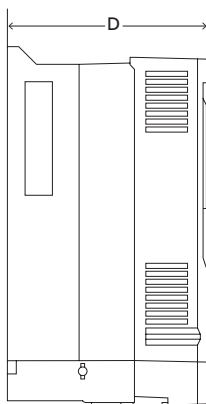
Drive specifications				
Hp	Type	Full load amps	Frame	Catalog number
230 Vac drives (range 208 to 240 V)				
7.5	Industrial	23.1	R2	ACS880-01-24A3-2+N5350
10	Industrial	29.3	R3	ACS880-01-031A-2+N5350
15	Industrial	44.0	R4	ACS880-01-046A-2+N5350
20	Industrial	58.0	R4	ACS880-01-061A-2+N5350
25	Industrial	71.0	R5	ACS880-01-075A-2+N5350
30	Industrial	83.0	R5	ACS880-01-087A-2+N5350
40	Industrial	109.0	R6	ACS880-01-115A-2+N5350
50	Industrial	138.0	R6	ACS880-01-145A-2+N5350
60	Industrial	162.0	R7	ACS880-01-170A-2+N5350
75	Industrial	196.0	R7	ACS880-01-206A-2+N5350
100	Industrial	260.0	R8	ACS880-01-274A-2+N5350
460 Vac drives (range 380 to 500 V)				
7.5	Industrial	11.0	R1	ACS880-01-11A0-5+N5350
10	Industrial	14.0	R2	ACS880-01-014A-5+N5350
15	Industrial	21.0	R2	ACS880-01-021A-5+N535+P934
20	Industrial	27.0	R3	ACS880-01-027A-5+N5350
25	Industrial	34.0	R3	ACS880-01-034A-5+N5350
30	Industrial	40.0	R4	ACS880-01-040A-5+N5350
40	Industrial	52.0	R4	ACS880-01-052A-5+N5350
50	Industrial	65.0	R5	ACS880-01-065A-5+N5350
60	Industrial	77.0	R5	ACS880-01-077A-5+N5350
75	Industrial	96.0	R6	ACS880-01-096A-5+N5350
100	Industrial	124.0	R6	ACS880-01-124A-5+N5350
125	Industrial	156.0	R7	ACS880-01-156A-5+N5350
150	Industrial	180.0	R7	ACS880-01-180A-5+N5350
200	Industrial	240.0	R8	ACS880-01-240A-5+N535+P934
250	Industrial	302.0	R9	ACS880-01-302A-5+N5350
575 Vac drives (525 to 690 V)				
7.5	Industrial	9.0	R5	ACS880-01-07A3-7+N5350
10	Industrial	11.0	R5	ACS880-01-09A8-7+N5350
15	Industrial	17.0	R5	ACS880-01-14A2-7+N5350
20	Industrial	22.0	R5	ACS880-01-018A-7+N5350
25	Industrial	27.0	R5	ACS880-01-022A-7+N5350
30	Industrial	32.0	R5	ACS880-01-026A-7+N5350
40	Industrial	41.0	R5	ACS880-01-035A-7+N5350
50	Industrial	52.0	R5	ACS880-01-042A-7+N5350
60	Industrial	62.0	R6	ACS880-01-061A-7+N5350
75	Industrial	77.0	R6	ACS880-01-084A-7+N5350
100	Industrial	99.0	R7	ACS880-01-098A-7+N5350
125	Industrial	125.0	R7	ACS880-01-119A-7+N5350
150	Industrial	144.0	R8	ACS880-01-142A-7+N5350
200	Industrial	192.0	R8	ACS880-01-174A-7+N5350
250	Industrial	242.0	R6	ACS880-01-210A-7+N5350

400 Vac drives (range 380 to 415 V)					
HP	KW	Type	Full load amps	Frame	Catalog number
7.5	5.50	Industrial	12.9	R1	ACS880-01-12A6-3+N5350
10	7.50	Industrial	17	R2	ACS880-01-017A-3+N5350
15	11.00	Industrial	25	R2	ACS880-01-025A-3+N5350
20	15.00	Industrial	32	R3	ACS880-01-032A-3+N5350
25	18.50	Industrial	38	R3	ACS880-01-038A-3+N5350
30	22.00	Industrial	45	R4	ACS880-01-045A-3+N5350
40	30.00	Industrial	61	R4	ACS880-01-061A-3+N5350
50	37.00	Industrial	72	R5	ACS880-01-072A-3+N5350
60	45.00	Industrial	87	R5	ACS880-01-087A-3+N5350
75	55.00	Industrial	105	R6	ACS880-01-105A-3+N5350
100	75.00	Industrial	145	R6	ACS880-01-145A-3+N5350
125	90.00	Industrial	169	R7	ACS880-01-169A-3+N5350
150	110.00	Industrial	206	R7	ACS880-01-206A-3+N5350
177	132.00	Industrial	246	R8	ACS880-01-246A-3+N5350
214	160.00	Industrial	293	R8(3)	ACS880-01-293A-3+N5350
268	200	Industrial	363	R9(6)	ACS880-01-363A-3+N5350
335	250.00	Industrial	430	R9(5)	ACS880-01-430A-3+N5350

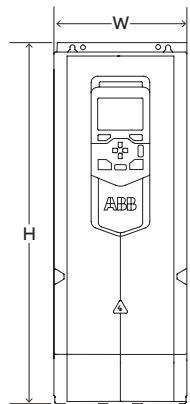
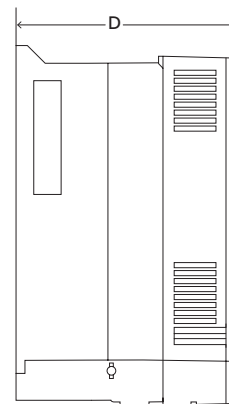
*For use only outside USA



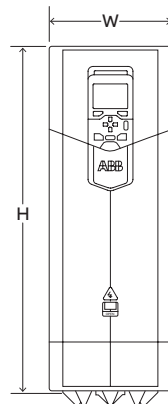
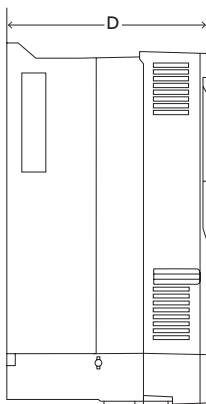
R1



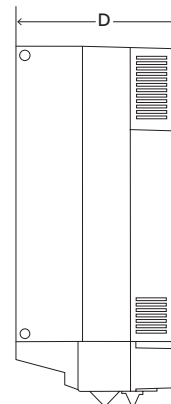
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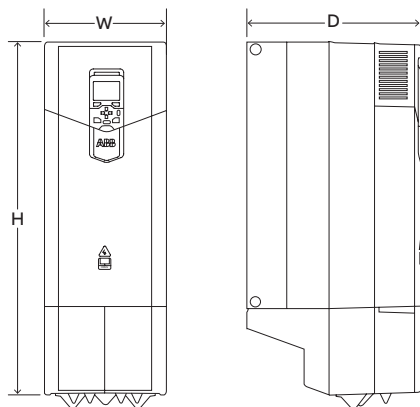


R3

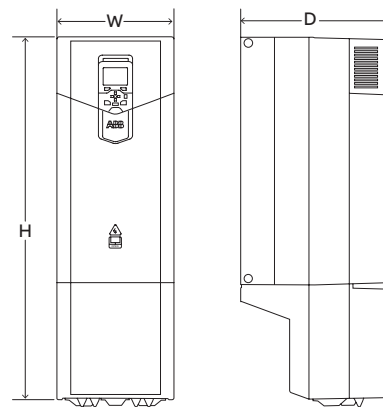


R4

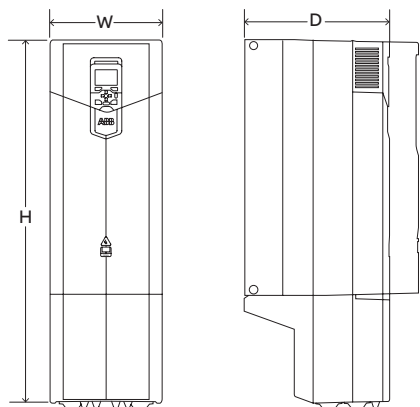




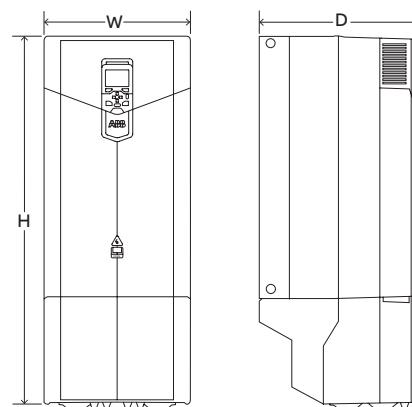
R6



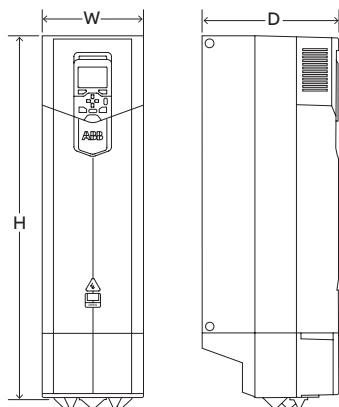
R7



R8



R9



R5

Frame Size	Product dimensions – inches (mm.)							
	Height (in.)	Height (mm.)	Width (in.)	Width (mm.)	Depth (in.)	Depth (mm.)	Weight (lb.)	Weight (kg.)
R1	16.0	405	6.1	155	8.9	226	13.2	6
R2	16.0	405	6.1	155	9.8	249	17.6	8
R3	18.5	471	6.7	182	10.3	261	22.0	10
R4	22.6	573	8.0	203	10.8	274	40.8	18.5
R5	28.7	730	8.0	203	10.8	274	50.7	23
R6	28.6	726	9.8	251	14.1	357	99.2	45
R7	34.6	880	11.2	284	14.4	365	121.3	55
R8	37.9	963	11.8	300	15.2	386	154.3	70
R9	37.6	955	15.0	380	16.3	413	216.0	98

Cooling tower motor RFQ

Company name: _____ **Project:** _____

Fan speed (RPM) _____ Ambient temp. _____

Existing motor Hp _____ Static pressure (inches of H₂O) _____

Fan shaft Hp _____

(This is normally an odd number ex: 42.3 Hp based on operating condition)

Voltage _____

Height restrictions Yes ☐ No ☐

"A" inches _____

(If yes, please give maximum height from motor to mounting plate to shaft extension. See diagram "A" dimension)

Match existing bolt hole pattern? Yes ☐ No ☐

If yes, please give existing bolt hole pattern _____

Air velocity in region of motor (ft./min.) _____

(This is normally an odd number ex: 42.3 Hp based on operating condition)

If retrofit ...

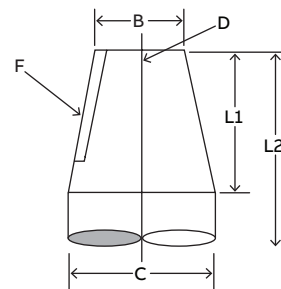
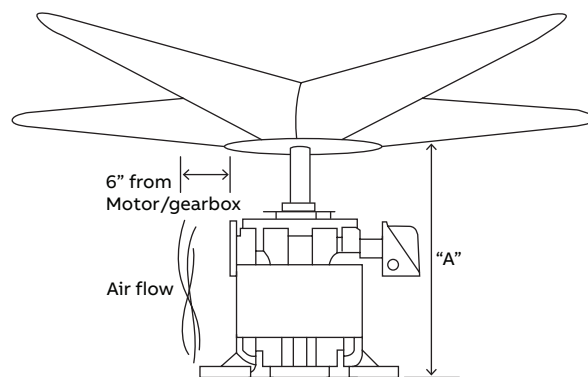
Gearbox manufacturer _____

Gearbox model no. _____

The solution requires a ABB ACS880+N350 CTDD Drive

Approximate distance from motor to VFD location _____ Feet

Drive location: control room _____ Outside: _____



Small end dia. "B" _____

Large end dia. "C" _____

Length of taper "L1" _____

Length of exposed shaft "L2" _____

Keyway size "F" _____

Shaft end drilled & tapped hole "D" _____



ABB Motors and Mechanical Inc.

5711 R.S. Boreham, Jr. Street

Fort Smith, AR 72901

Ph: 1.479.646.4711

new.abb.com/motors-generators



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